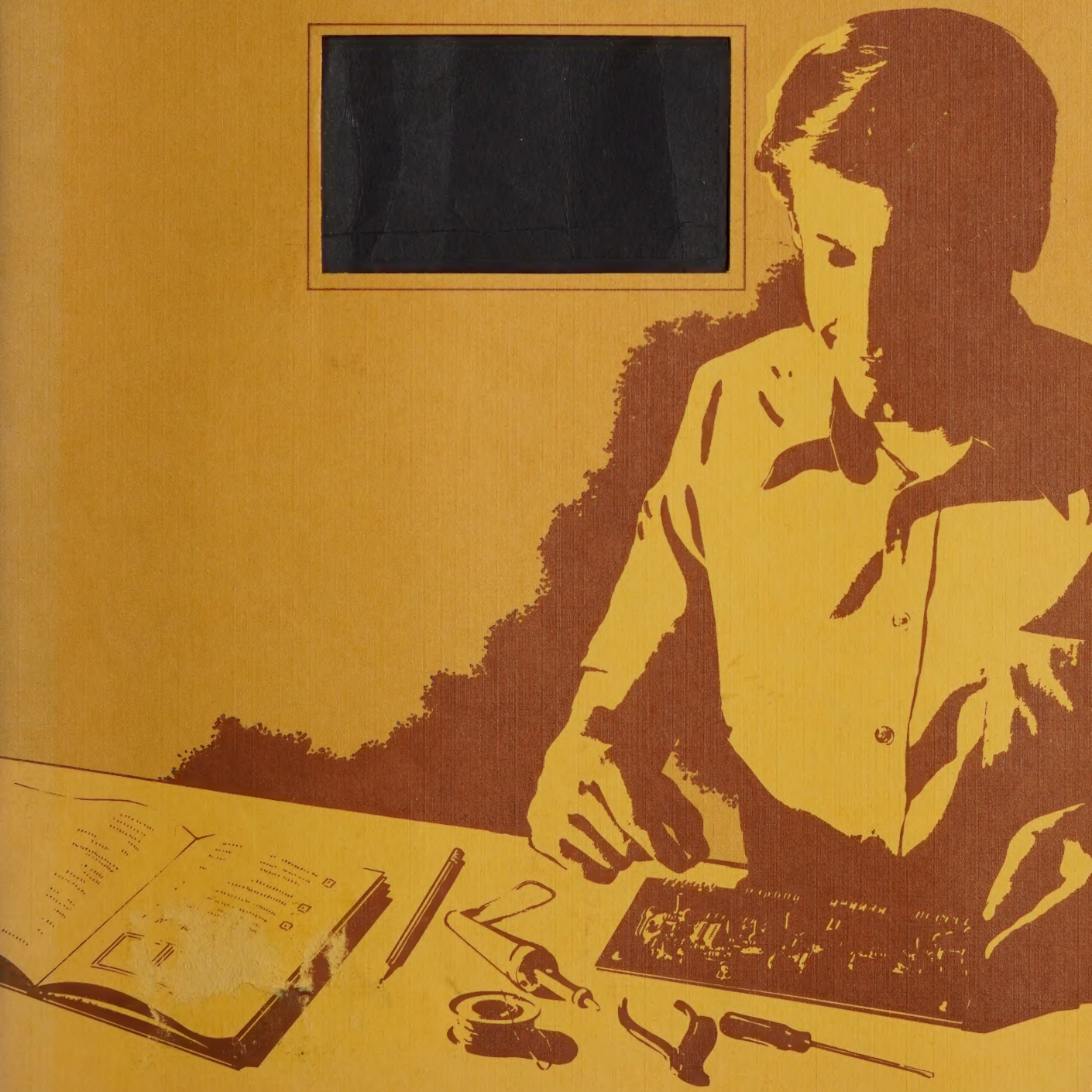
HEATHKIT® MANUAL



HEATH COMPANY • BENTON HARBOR, MICHIGAN

HEATH COMPANY PHONE DIRECTORY

The following telephone numbers are direct lines to the departments listed:

Kit orders and delivery information ..... (616) 982-3411
Credit ..... (616) 982-3561
Replacement Parts ..... (616) 982-3571

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YOUR HEATHKIT 90 DAY LIMITED WARRANTY

If you are not satisfied with our service - warranty or otherwise - or with our products, write directly to our Director of Customer Services, Heath Company, Benton Harbor, Michigan 49022. He will make certain your problems receive immediate, personal attention.

Our attorney, who happens to be quite a kitbuilder himself, insists that we describe our warranty using all the necessary legal phrases in order to comply with the new warranty regulations. Fine. Here they are:

For a period of ninety (90) days after purchase, Heath Company will replace or repair free of charge any parts that are defective either in materials or workmanship. You can obtain parts directly from Heath Company by writing us at the address below or by telephoning us at (616) 982-3571. And we'll pay shipping charges to get those parts to you — anywhere in the world.

We warrant that during the first ninety (90) days after purchase, our products, when correctly assembled, calibrated, adjusted and used in accordance with our printed instructions, will meet published specifications.

If a defective part or error in design has caused your Heathkit product to malfunction during the warranty period through no fault of yours, we will service it free upon proof of purchase and delivery at your expense to the Heath factory, any Heathkit Electronic Center (units of Schlumberger Products Corporation), or any of our authorized overseas distributors.

You will receive free consultation on any problem you might encounter in the assembly or use of your Heathkit product. Just drop us a line or give us a call. Sorry, we cannot accept collect calls.

Our warranty does not cover and we are not responsible for damage caused by the use of corrosive solder, defective tools, incorrect assembly, misuse, fire, or by unauthorized modifications to or uses of our products for purposes other than as advertised. Our warranty does not include reimbursement for customer assembly or set-up time.

This warranty covers only Heathkit products and is not extended to allied equipment or components used in conjunction with our products. **We are not responsible for incidental or consequential damages.** Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

HEATH COMPANY
BENTON HARBOR, MI. 49022

Prices and specifications subject to change without notice.

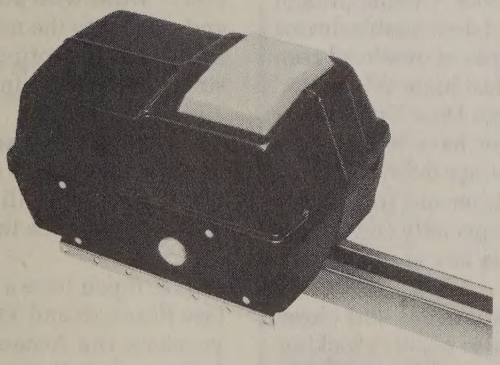
Heathkit® Manual

for the

DELUXE GARAGE DOOR OPENER

Model GDA-3309-1

595-2035-01



HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

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INTRODUCTION

The Heathkit Deluxe Garage Door Opener Model GDA-3309-1 is a sturdy, quiet, and dependable device which will open and close all types of overhead residential garage doors up to 7-1/2 feet high. When used with the optional Heathkit Garage Door Transmitter and Receiver, you will no longer have to leave the comfort of your car to open the garage door. Just press the button on the wireless transmitter and your garage door will open or close. This is especially convenient during bad weather or when it is late at night.

The Garage Door Opener not only opens and closes your garage door, but also provides positive locking. Once closed, your garage door cannot be opened by hand from the outside of the garage. Should a power failure occur, the quick-release arm latch can be easily disengaged from inside your garage, permitting the door to be opened by hand.

A clutch and unique safety switch feature returns the door to its fully open position if it becomes obstructed while the door is being closed. Other safety features include circuit overload protection and a safety lamp. A time delay circuit turns on the safety lamp for 1 to 3 minutes when the garage door is opened or closed to prevent fumbling in the dark for your garage lights.

Precut wires with push-on terminals speed assembly and eliminate the need for a soldering iron. Also, an adjustable mounting bracket and universal hanger straps assure easy installation in almost any garage.

The Heathkit Deluxe Garage Door Opener has been designed to provide many years of trouble-free operation. Its features will not only save time and steps, but will also enhance the value of your home.

NOTE: If you have a jamb and pivot type garage door (see Pages 18 and 31), it will be necessary for you to purchase the Accessory Kit Model GDA-3209-2 before you install your Garage Door Opener.

WARNING AND CAUTION paragraphs precede several steps in the "Assembly," "Installation," and "Operation" sections of this Manual. It is very important that you read and understand each of these notices, as they appear, to avoid any possible personal injury and to insure trouble-free operation of your Garage Door Opener.

Refer to the "Kit Builders Guide" for complete information on unpacking, parts identification, tools, wiring, and step-by-step assembly procedures.

PARTS LIST

Check each part against the following list. The key numbers correspond to the numbers in the "Parts Pictorial" (Illustration Booklet, Pages 1 and 2).

Some parts are packaged in envelopes with their part numbers printed on the outside. After being identified, return these parts to their envelopes until they are called for in assembly steps.

To order a replacement part: Use the Parts Order Form furnished with this kit or at the rear of this Manual. If one is not available, refer to "Replacement Parts" inside the rear cover of the Manual. For prices, refer to the separate "Heath Parts Price List."

RELAY — SWITCHES

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
A1	237-213	1	Latching relay	
A2	237-6	1	SPDT switch	
A3	237-7	1	DPDT switch	
A4	237-8	1	Thermal switch	
A5	237-30	1	Pushbutton switch with screws	

TERMINAL STRIP — TERMINAL BLOCKS — SOCKET — CONNECTOR

B1	237-206	1	3-screw terminal strip	
B2	237-9	1	3-post terminal block	
B3	237-41	1	2-lug connector	
B4	237-177	1	6-post terminal block	
B5	237-178	1	Lamp socket	

PLASTIC PARTS

C1	237-193	1	Nylon gear	
C2	237-154	1	Lamp lens	
C3	237-36	2	Cam	
C4	237-152	1	Upper cabinet housing	
C5	237-153	1	Lower cabinet housing	
C6	237-155	8	Friction fasteners	
C7	237-159	1	Up key	
C7	237-160	1	Down key	
C8	237-194	2	Idler bracket	
C9	354-5	6	Cable tie	

METAL PARTS

D1	237-12	1	Track pulley	
D2	237-13	2	Wrench	
D3	237-14	1	Motor pulley (with setscrew)	
D4	237-25	2	Hanger strap	
D5	237-40	1	Capacitor bracket	
D6	237-43	1	Strain relief	
D7	237-102	1	Clutch plate	
D8	237-205	1	Chassis	
D9	237-157	2	Hanger bracket	
D10	237-158	2	Channel bracket	
D11	237-204	1	Wall-mounting bracket	
D12	237-167	1	Motor support bracket	
D13	237-207	1	Right arm	
D14	237-208	1	Left arm	
D15	237-161	1	Extension	
D16	237-209	1	Door bracket	
D17	237-210	1	Pin	
D18	237-170	1	Spring	

HARDWARE

#6 Hardware

E1	250-26	7	6-32 × 5/8" screw	
E2	250-13	4	6-32 × 1" screw	
E3	252-3	11	6-32 nut	
E4	254-1	11	#6 lockwasher	

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
#8 Hardware				
F1	250-137	5	8-32 × 3/8″ screw	
F2	252-4	8	8-32 nut	
F3	253-14	5	#8 fiber washer	
F4	253-45	10	#8 flat washer	
F5	254-2	10	#8 lockwasher	
#10 Hardware				
G1	250-141	18	10-24 × 1/2″ screw	
G2	252-30	18	10-24 nut	
G3	254-37	18	#10 lockwasher	
5/16″ Hardware				
H1	237-48	2	5/16″-18 × 5/8″ bolt	
H2	237-49	2	5/16″-18 × 1″ bolt	
H3	237-171	1	5/16″-18 × 2-1/2″ bolt	
H4	237-107	1	5/16″-18 × 3″ bolt	
H5	237-60	5	5/16″-18 nut	
H6	237-172	1	5/16″-18 locknut	
H7	237-66	5	5/16″ split lockwasher	
H8	237-117	2	5/16″ flat washer	
Other Hardware				
J1	237-45	4	1-1/2″ lag bolt	
J2	237-46	4	1/4″-20 × 2″ carriage bolt	
J3	237-94	2	C-spring	
J4	250-470	4	1/4″-20 × 1-1/2″ bolt	
J5	252-57	4	1/4″-20 nut	
J6	254-18	4	1/4″ split lockwasher	
WIRE				
	237-179	2	9″ red wire	
	237-180	1	12″ red wire	
	237-182	3	10″ blue wire	
	237-183	1	8″ gray wire	
	237-184	1	10″ gray wire	
	237-185	2	19″ gray wire	

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
Wire (cont'd.)				
	237-187	1	7″ white wire	
	237-188	1	10″ white wire	
	237-189	1	5″ brown wire	
	237-190	1	18″ brown wire	
	237-191	1	12″ black wire	
	237-211	2	7″ black wire	
	237-212	1	14″ gray wire	
	237-42	1	3-wire line cord	
	237-82	1	2-conductor cable (approximately 20′)	
Without Connectors				
	344-50	3′	Black wire	
	344-51	3′	Brown wire	
	344-52	3′	Red wire	
MISCELLANEOUS				
K1	237-1	1	Capacitor	
K2	237-4	1	Transformer	
	237-26	1	Rope	
K3	237-44	6	Staple	
K4	237-110	2	Wire nut	
K5	237-202	1	Motor	
K6	237-166	1	Channel assembly	
	237-15	1	24″ V-belt	
	237-214	1	NEC label	
	390-1060	2	"Warning" label	
	390-1394	1	Heathkit label	
	391-34	1	Blue and white label	

NOTE: Be sure you refer to the number on the blue and white label in any communications you may have with the Heath Company about this kit.

597-260	1	Parts Order Form
597-308	1	Kit Builders Guide
	1	Assembly Manual (See Page 1 for part number.)

NOTE: The Heathkit GDA-3209-2 Accessory Kit for jamb and pivot door installations is not supplied. This kit should be ordered separately.

STEP-BY-STEP ASSEMBLY

Position all parts as shown in the Pictorials. Follow the instructions carefully and read the entire step before you perform the operation.

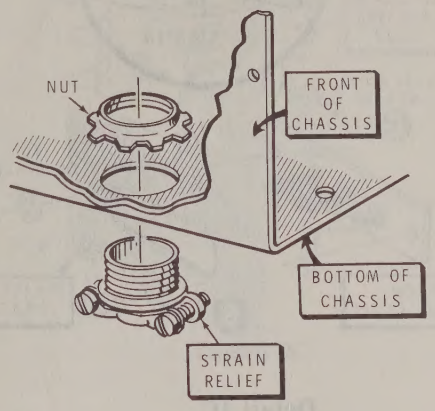
INITIAL PARTS MOUNTING

Refer to Pictorial 1 (Illustration Booklet, Page 3) for the following steps.

( ) Position the chassis as shown.

NOTE: The term "hardware" refers to the screws, nuts, and lockwashers when parts are mounted in some of the following steps. The phrase "use 10-24 × 1/2" hardware," for example, means to use a 10-24 × 1/2" screw, one or more #10 lockwashers, and a 10-24 nut. Refer to the detail called out in the step for the correct number of lockwashers and the correct way to install the hardware.

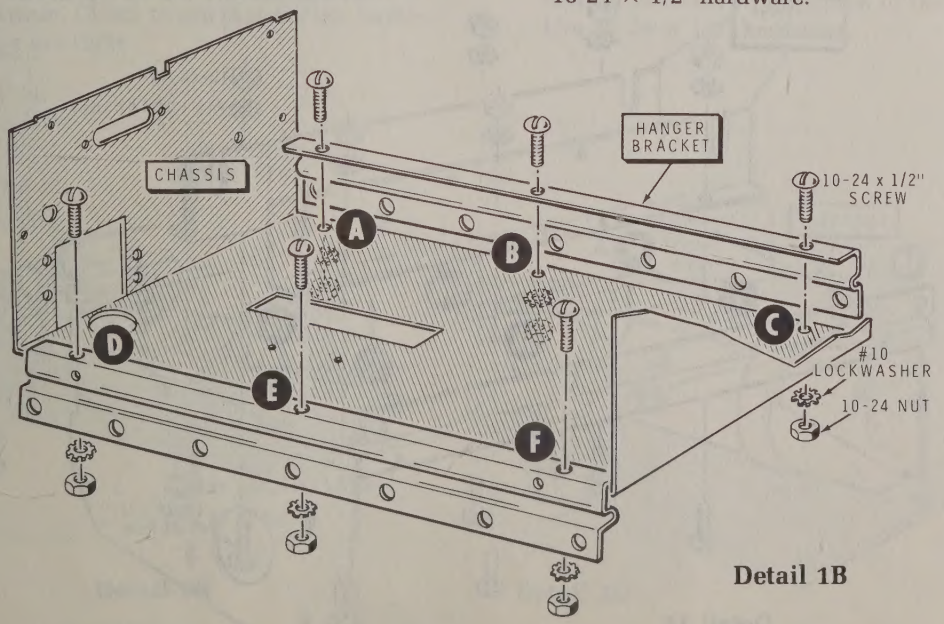
( ) Refer to Detail 1A and install the strain relief at H. Position the screws as shown and use the nut supplied with the strain relief. Tighten the nut with gas pliers. Be sure the two screws are positioned toward the front of the chassis.



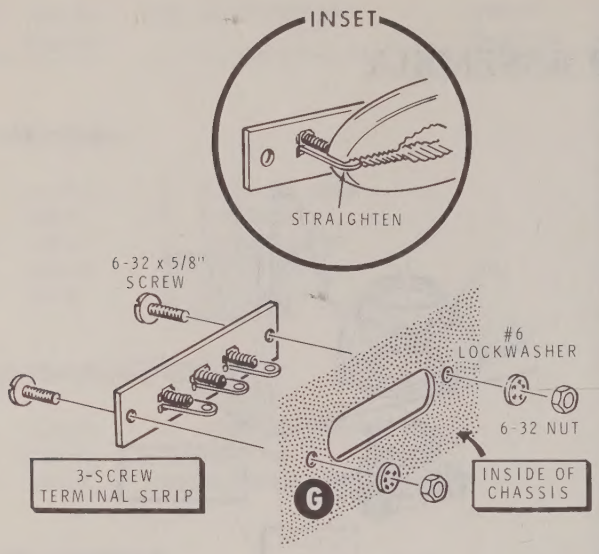
Detail 1A

( ) Refer to Detail 1B and install a hanger bracket on one side of the chassis as shown. Use 10-24 × 1/2" hardware to secure the bracket at A, B, and C. Tighten the hardware securely.

( ) In the same manner, install a hanger bracket on the other side of the chassis at D, E, and F. Use 10-24 × 1/2" hardware.



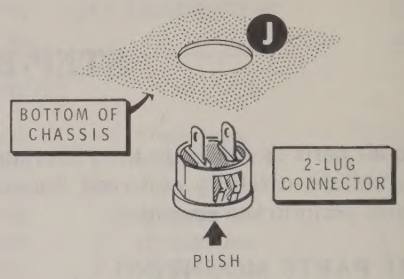
Detail 1B



Detail 1C

( ) Refer to the inset drawing on Detail 1C and, if necessary, straighten the terminals of the 3-screw terminal strip with pliers as shown.

( ) Refer to Detail 1C and mount the 3-screw terminal strip on the chassis at G. Use 6-32 × 5/8" hardware. Position the lugs as shown.



Detail 1D

( ) Refer to Detail 1D and install the 2-lug connector at J. Position the lugs as shown in the Pictorial; then press the connector into the hole.

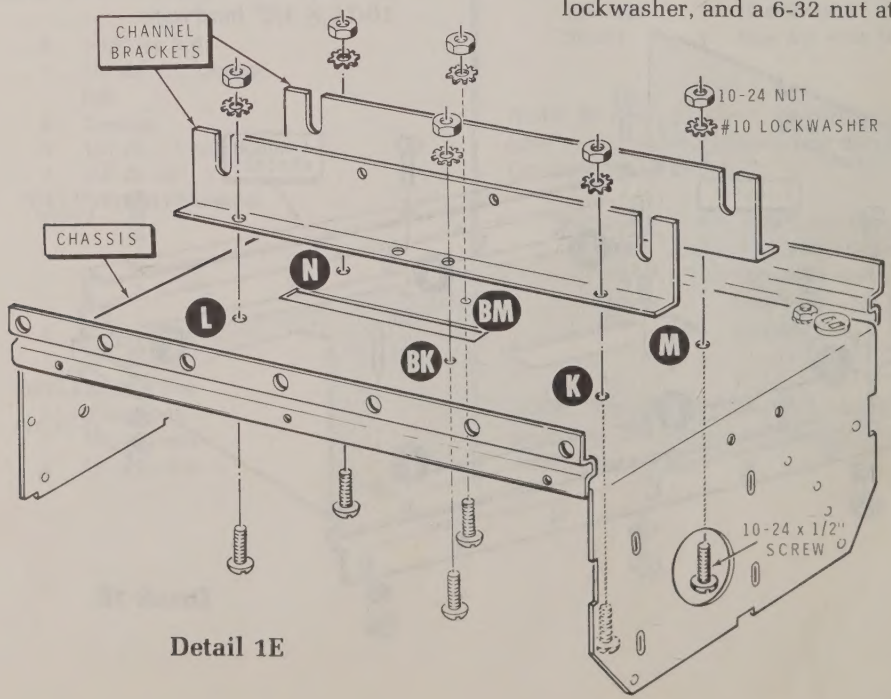
( ) Turn the chassis upside down.

( ) Refer to Detail 1E and mount a channel bracket on the underside of the chassis as shown. Use 10-24 × 1/2" hardware at L, BK, and K. Tighten the hardware securely.

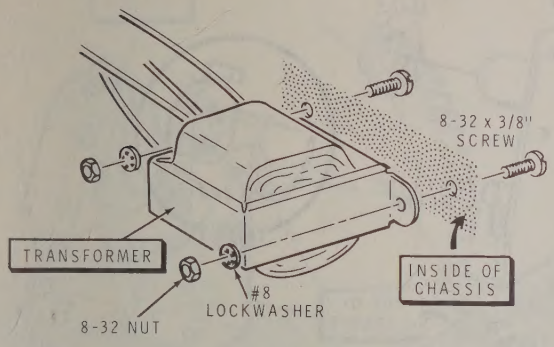
( ) In the same manner, mount the other channel bracket on the underside of the chassis at N, BM, and M. Use 10-24 × 1/2" hardware.

Refer to Pictorial 1 (Illustration Booklet, Page 3) for the following steps.

( ) Loosely mount a 6-32 × 5/8" screw, a #6 lockwasher, and a 6-32 nut at AN.



Detail 1E



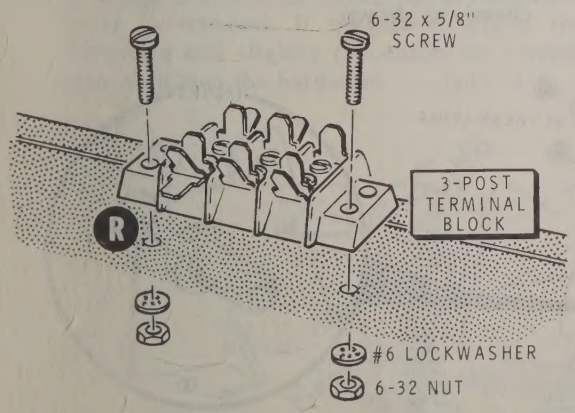
Detail 2A

Refer to Pictorial 2 (Illustration Booklet, Page 3) for the following steps.

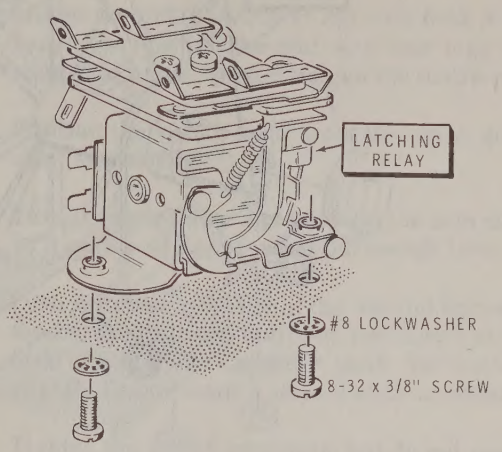
( ) Refer to Detail 2A and mount the transformer at P. Use 8-32 × 3/8" hardware. Position the transformer leads as shown in the Pictorial.

( ) Refer to Detail 2B and mount the 3-post terminal block at R. Use 6-32 × 5/8" hardware. Position the lugs as shown in the Pictorial. Check to see that the six terminal screws are tight.

( ) Install the 6-post terminal block at S. Position the lugs as shown in the Pictorial. Use 6-32 × 5/8" hardware. Check to see that the ten terminal screws are tight.



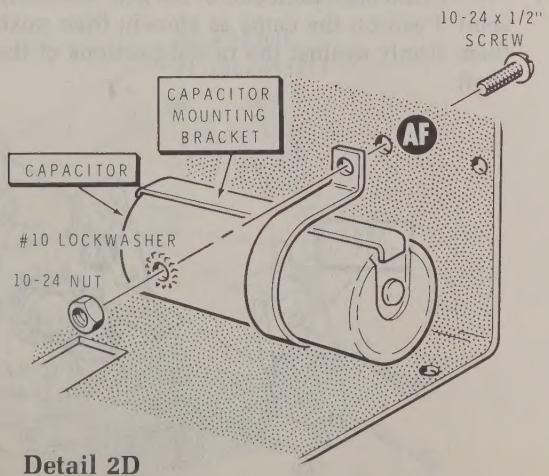
Detail 2B



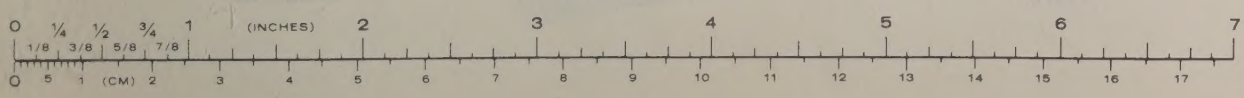
Detail 2C

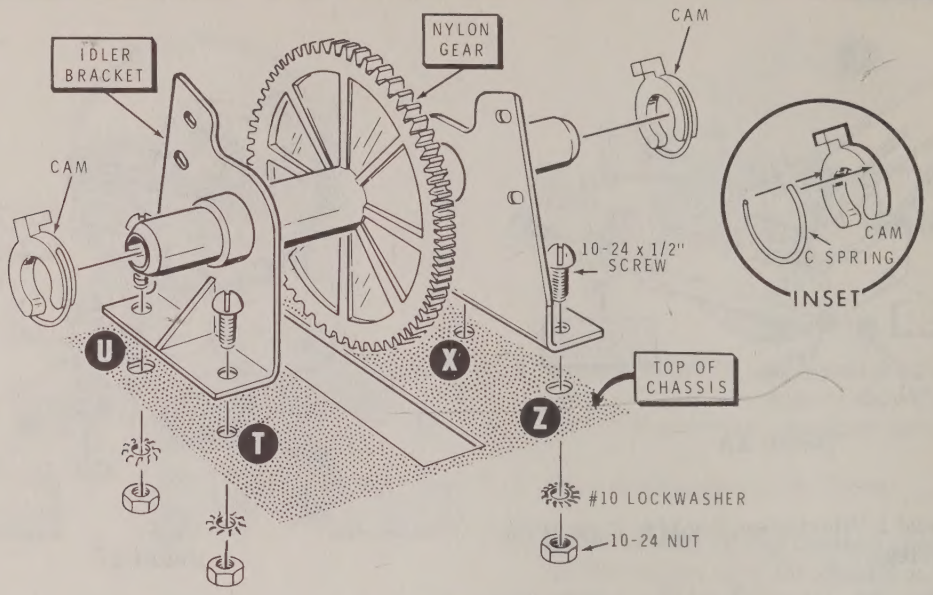
( ) Refer to Detail 2C and mount the latching relay on the chassis at Y. Position the relay as shown in the Pictorial. Use two 8-32 × 3/8" screws and two #8 lockwashers.

( ) Refer to Detail 2D and mount the capacitor bracket on the capacitor as shown. Then mount the capacitor bracket on the chassis at AF as shown in the Pictorial. Be sure the capacitor bracket is seated in the notch of the capacitor. Use 10-24 × 1/2" hardware.



Detail 2D





Detail 2E

( ) Refer to Detail 2E and push an idler bracket onto each shaft of the nylon gear as shown.

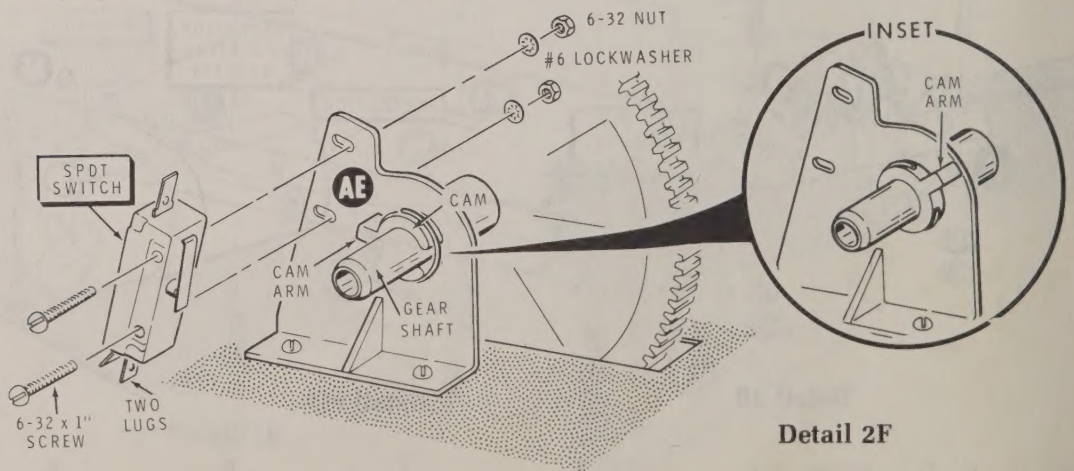
( ) Mount the idler brackets to the chassis at T and U, and at X and Z as shown in the Pictorial and the Detail. Use 10-24 × 1/2" hardware. First, loosely install the four sets of hardware; then tighten them. Check the rotation of the gear; it should bind very slightly.

( ) Refer to the inset drawing on Detail 2E and install a C spring on each cam.

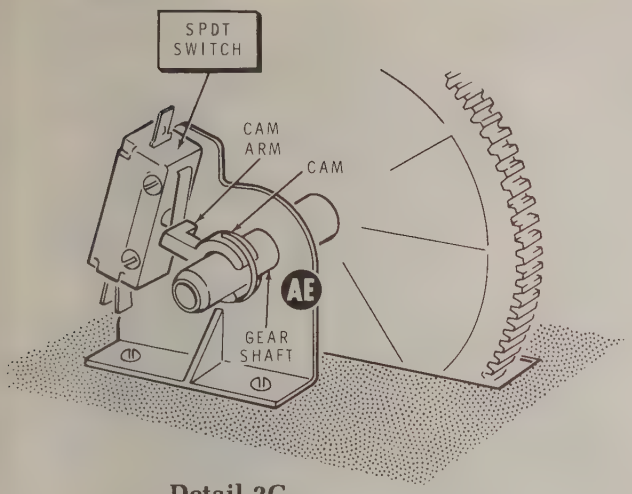
( ) Press a cam onto each end of the gear assembly shaft. Position the cams as shown; then push them firmly against the raised portions of the shaft.

NOTE: To insure proper operation of the Door Opener, install the limit switches (SPDT and DPDT) as directed in the following steps. It is not necessary for the cams to rotate past the limit switch levers. If you rotate either of the cams counterclockwise past the end of the limit switch lever, continue turning the cam in the same direction until it is in the desired direction. Do not attempt to force the cam clockwise against the end of the limit switch lever.

( ) Refer to Detail 2F and mount the SPDT switch at AE. Use 6-32 × 1" hardware, but do not tighten the hardware at this time. Be sure the end of the switch with two lugs is positioned toward the chassis as shown.



Detail 2F



Detail 2G

Refer to Detail 2G for the following steps.

( ) Position the switch as far from the gear shaft as possible.

( ) Turn the nylon gear so the cam arm points straight toward the switch lever.

( ) Carefully push the switch toward the cam arm until you hear the switch click.

( ) Tighten the switch hardware; but do not overtighten the hardware to avoid damage to the switch.

( ) Turn the nylon gear back and forth and be sure you hear a click from switch AE as the switch lever is actuated. If necessary, loosen the hardware and slightly reposition the switch; then retighten the hardware.

Refer to Detail 2H for the following steps.

( ) Mount the DPDT switch at AD with 6-32 × 1" hardware. Position the end with four lugs toward the chassis. Do not tighten the hardware.

( ) Position the switch as far from the nylon gear shaft as possible.

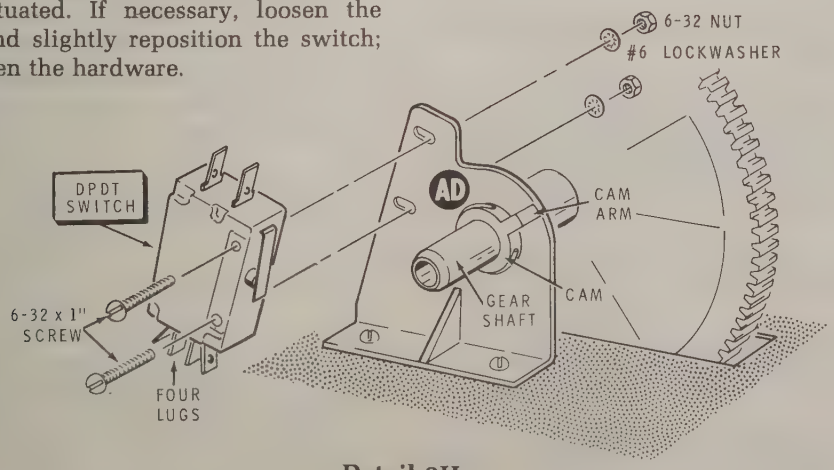
( ) Turn the nylon gear and position the cam arm so it points straight toward the switch lever.

( ) Push the switch equally at the top and bottom, toward the cam arm until you just hear a click from the switch. Carefully push the switch slightly further until a second click is heard.

( ) Tighten the switch hardware; but do not overtighten the hardware to avoid damage to the switch.

( ) Turn the nylon gear back and forth and listen for the two clicks from switch AD as the lever is actuated. If necessary, loosen the hardware and slightly reposition the switch; then retighten the hardware.

( ) Turn the nylon gear until you hear two clicks from switch AD. Hold the nylon gear firmly and twist the cam at switch AE until the cam arm is positioned as shown in the inset drawing on Detail 2F.



Detail 2H

INITIAL WIRING

In the following steps, use the length and color of wire specified. Position these wires so they do not interfere with the operation of the gear assembly, relay, and the switches. Make sure you push the connectors all the way onto the terminals as you install the wires.

Refer to Pictorial 3 (Illustration Booklet, Page 4) for the following steps.

NOTES:

1. The inset drawing of Pictorials 3 and 4 show the lettering sequence of the terminal blocks. The lugs will be called out by location and position. For example: Lug 1B of terminal block R means; lug 1, position B, of terminal block R.

2. Refer to the inset drawing on Pictorial 3. This capacitor may be supplied with the lugs-connector strips positioned either horizontally or vertically. WARNING: The red and blue wires must **not** be connected to two lugs on the same connector strip in the next two steps.

( ) Connect a 9″ red wire from lug 2 of capacitor AF to lug 2C of terminal block S.

( ) Connect a 10″ blue wire from lug 1 of capacitor AF to terminal 3C of terminal block S.

( ) Connect a 10″ gray wire from lug 2 of socket J to lug 3A of terminal block R. Pass this wire over the top of the transformer as shown. NOTE: The end of the wire with the larger connector goes to socket J.

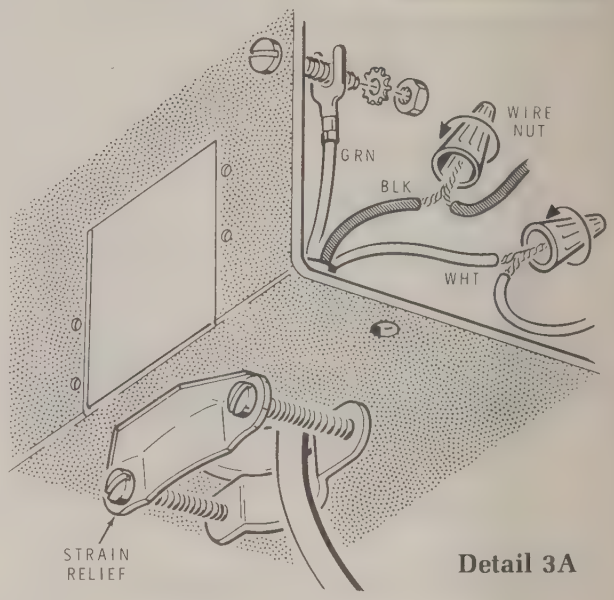
( ) Connect a 5″ brown wire from lug 1 of socket J to lug 4 of relay Y.

( ) Connect an 8″ gray wire from lug 6 of switch AD to lug 2A of terminal block R. NOTE: The end of the wire with the smaller connector goes to terminal block R.

( ) Connect a 7″ black wire from lug 7 of relay Y to lug 2C of terminal block R.

( ) Connect a 7″ black wire from lug 6 of relay Y to lug 1C of terminal block R.

( ) Wrap the two green (or brown) transformer leads once around the body of the transformer. Connect one green (or brown) lead to lug 3C of terminal block R.



Detail 3A

( ) Connect the other green (or brown) lead to lug 1B of terminal block R.

( ) Pass the two black transformer leads in under the transformer. Connect either black lead to lug 4B of terminal block S.

( ) Connect the remaining black transformer lead to lug 1B of terminal block S.

Refer to Detail 3A for the following steps.

( ) Push the free end of the line cord upward through the strain relief so the outer insulation projects above the strain relief as shown in the Pictorial.

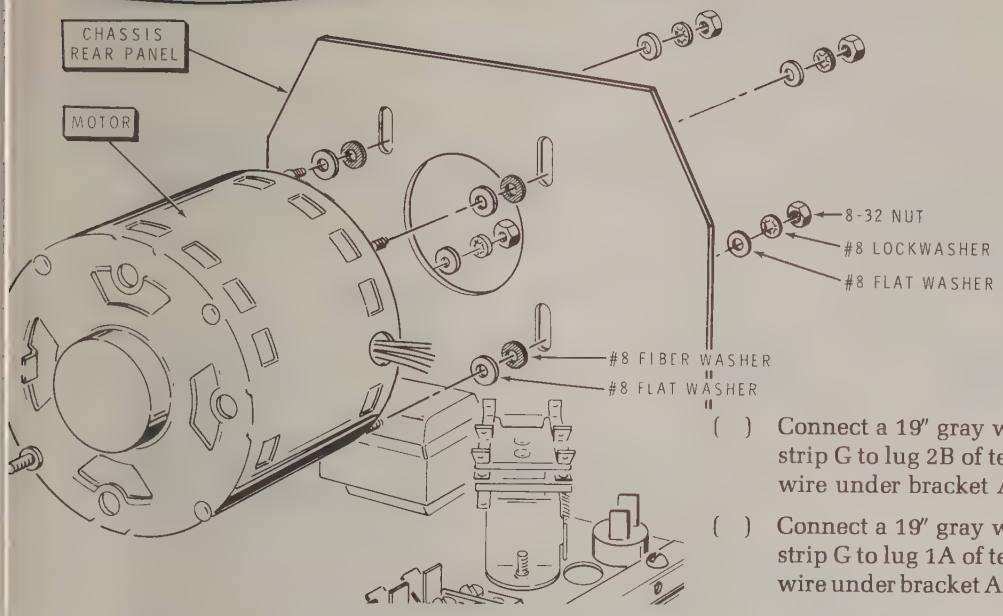
( ) Place the solder lug on the end of the green lead in under the lockwasher at AN. Tighten screw AN securely.

( ) Tighten the two strain relief screws.

( ) Tightly twist the ends of the black and the white line cord wires.

( ) Twist the bare wire end of the 12″ black wire and the black line cord wire tightly together. Then twist a wire nut tightly onto the ends of these wires.

( ) Connect the other end of this black wire to lug 4C of terminal block S.



Detail 5A

( ) Twist the free end of the 10" white wire to the white line cord wire. Twist a wire nut onto the ends of these white wires.

( ) Connect the other end of this white wire to lug 1C of terminal block S.

Refer to Pictorial 4 (Illustration Booklet, Page 5) for the following steps.

( ) Connect a 10" blue wire from lug 2 of switch AE to lug 5 of relay Y.

( ) Connect a 7" white wire from lug 2 of relay Y to lug 1A of terminal block S.

( ) Connect a 9" red wire from lug 4 of switch AD to lug 2B of terminal block S.

( ) Connect a 10" blue wire from lug 1 of switch AE to lug 3B of terminal block S.

( ) Connect a 12" red wire from lug 1 of switch AD to lug 1 of relay Y.

( ) Connect a 14" gray wire from lug 2 of switch AD to lug 3 of relay Y.

( ) Connect a 19" brown wire from lug 1 of terminal strip G to lug 3B of terminal block R. Route this wire under bracket AF as shown in the Pictorial.

( ) Connect a 19" gray wire from lug 2 of terminal strip G to lug 2B of terminal block R. Route this wire under bracket AF as shown.

( ) Connect a 19" gray wire from lug 3 of terminal strip G to lug 1A of terminal block R. Route this wire under bracket AF as shown in the Pictorial.

( ) Mount the lamp socket at AG on the chassis. Use 8-32 × 3/8" hardware.

( ) Connect the white lamp socket lead to lug 1D of terminal block S.

( ) Connect the black lamp socket lead to lug 5B of terminal block S.

MOTOR INSTALLATION

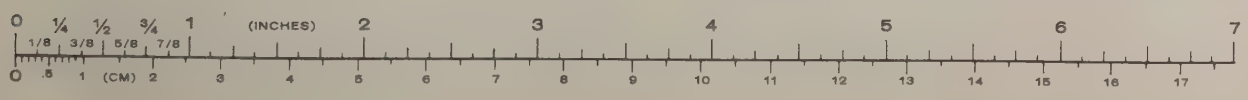
Refer to Pictorial 5 (Illustration Booklet, Page 5) for the following steps.

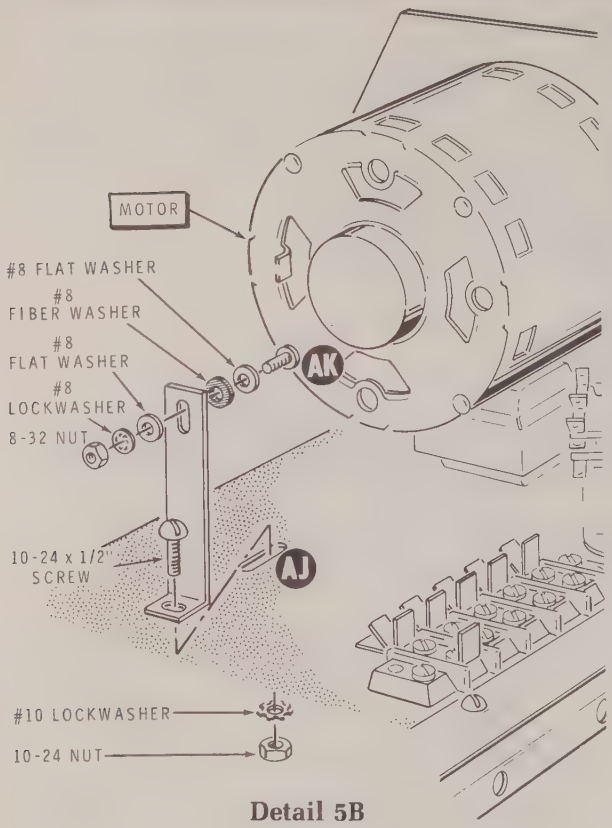
( ) Refer to Detail 5A. Place four #8 flat washers and four #8 fiber washers on the motor mounting studs. Mount the motor on the chassis rear panel as shown in the Pictorial. Secure the motor to the panel with the hardware indicated in the Detail. Position the motor so the leads are as shown in the Pictorial. Position the motor mounting studs at the bottom of the slots in the panel. Tighten the hardware only finger tight at this time.

( ) Connect the yellow motor lead to lug 4A of terminal block S.

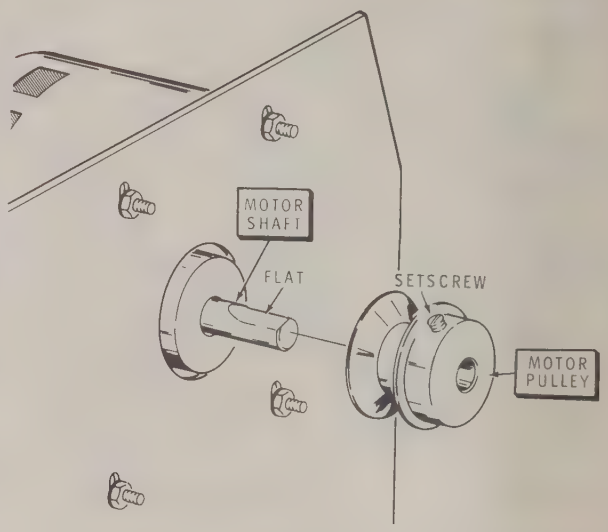
( ) Connect the blue motor lead to lug 3A of terminal block S.

( ) Connect the red motor lead to lug 2A of terminal block S.





Detail 5B



Detail 5C

( ) Refer to Detail 5B and install the motor support bracket at AJ as shown. Use 10-24 × 1/2″ hardware. Do not tighten this hardware.

( ) Place a #8 flat washer and a #8 fiber washer on motor stud AK. Place the upper end of the motor bracket over stud AK. Then loosely secure the bracket to the motor stud with a #8 flat washer, a #8 lockwasher, and an 8-32 nut.

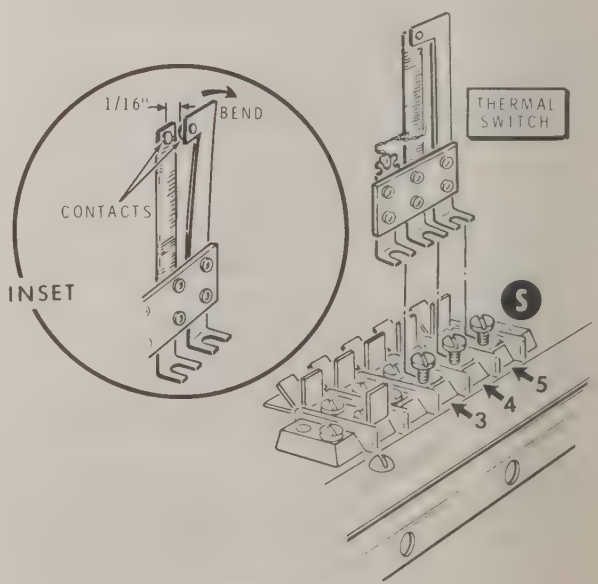
( ) Tighten the motor bracket hardware at AJ.

( ) Refer to Detail 5C and install the motor pulley on the motor shaft. Line up the flat on the shaft with the setscrew in the pulley. Then push the pulley onto the shaft until the end of the shaft and the outside of the pulley are flush. Tighten the setscrew.

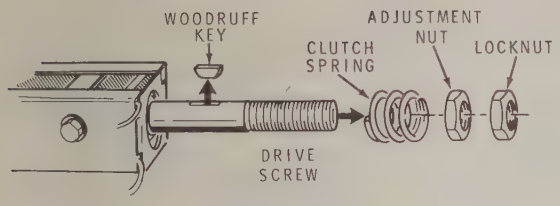
( ) Check to see that the contacts of the thermal switch are approximately 1/16″ apart as shown in the inset drawing on Detail 5D. If necessary, bend the indicated arm to obtain the correct spacing.

( ) Refer to Detail 5D and install the thermal switch under the indicated screws on lugs 3, 4, and 5 of terminal block S.

Set this assembly aside temporarily.



Detail 5D



Detail 6A

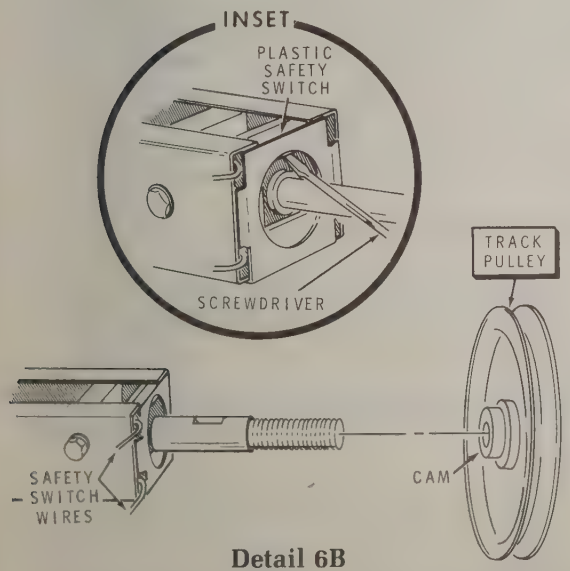
Refer to Pictorial 6 (Illustration Booklet, Page 5) for the following steps.

( ) Refer to Detail 6A and remove the two nuts, the clutch spring, and the woodruff key from the end of the channel assembly drive screw. Use the wrenches furnished.

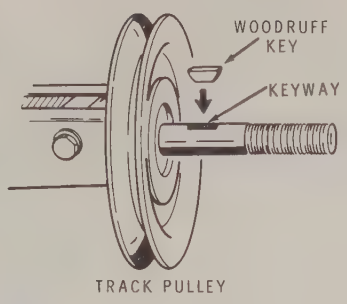
( ) Refer to the inset drawing of Detail 6B and push the safety switch upward as far as possible.

NOTE: If your garage door is the jamb and pivot type, use the large pulley and large belt supplied with the GDA-3209-2 Accessory Kit in the following steps.

( ) Install the track pulley on the drive screw. Position the pulley cam as shown in Detail 6B. Then rotate the pulley several times and note that the wires coming from the safety switch move up and down. This movement indicates the pulley is properly seated in the safety switch.



Detail 6B



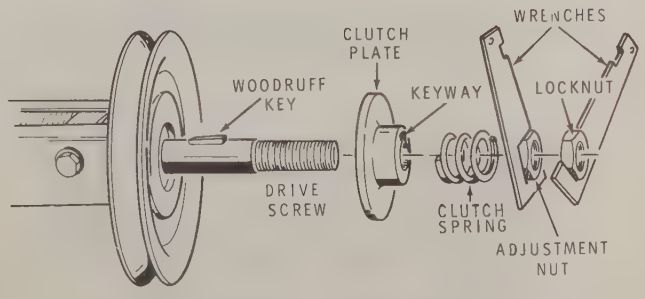
Detail 6C

( ) Refer to Detail 6C and install the woodruff key in the drive screw keyway. Gently tap this key to seat it in the keyway.

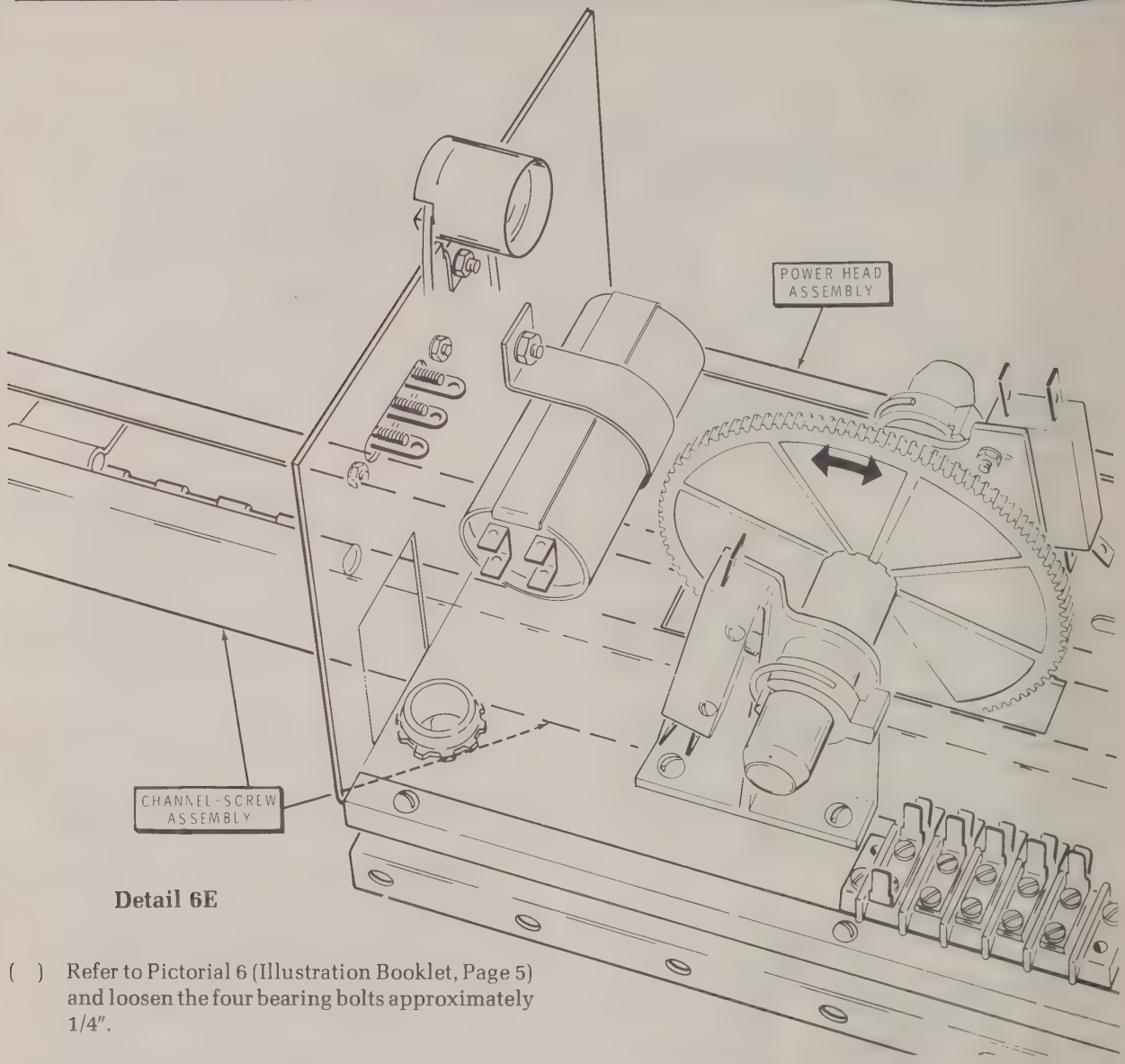
( ) Refer to Detail 6D and line up the clutch plate keyway and the woodruff key. Then slide the clutch plate onto the drive screw.

( ) Install the clutch spring and the two nuts. Tighten the adjustment nut only enough to put a slight pressure on the clutch spring. Then tighten the locknut against the adjustment nut. Two wrenches are provided for this purpose.

( ) Rotate the drive screw to position the trolley approximately 4 feet from the indicated end of the channel as shown in Pictorial 6.



Detail 6D



Detail 6E

( ) Refer to Pictorial 6 (Illustration Booklet, Page 5) and loosen the four bearing bolts approximately 1/4".

NOTE: In the next steps, be sure the teeth of the gear mesh with the threads in the drive screw in the channel assembly.

( ) Carefully place the power head assembly on the channel-screw assembly. Align the cutouts in the channel brackets with the bearing bolts. Position the flat washers (or the flanged bolt heads) on the outside of the power head channel brackets.

( ) Push the power head assembly firmly down onto the channel-screw assembly. Rock the nylon gear back and forth slightly to be sure its teeth are meshed. Then tighten the four bearing bolts securely.

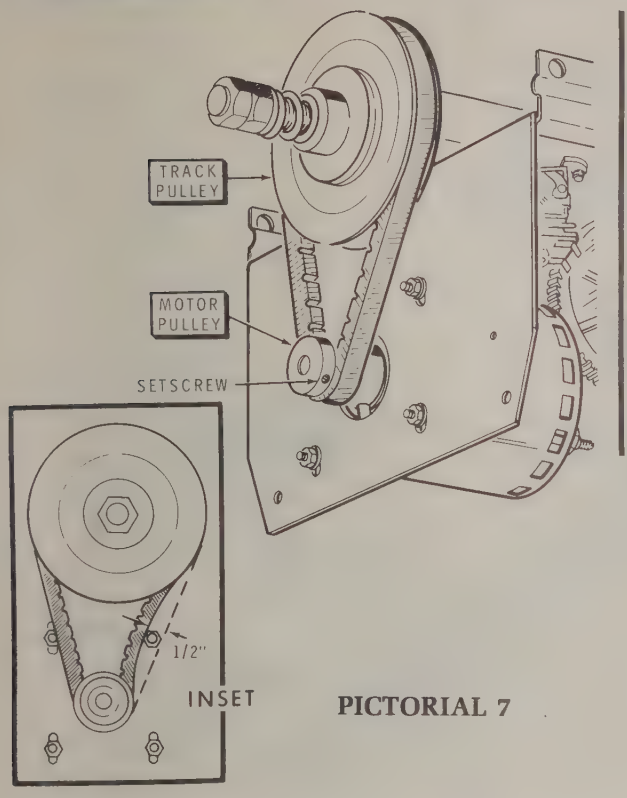
Refer to Pictorial 7 for the following steps.

( ) Loosen the setscrew in the motor pulley and carefully align this pulley with the track pulley. Tighten the setscrew.

NOTE: The belt supplied with your kit may or may not have the serrations (as illustrated) on its inside surface.

( ) Install the V-belt over both pulleys.

CAUTION: In the following steps, do not overtighten the motor mounting hardware; the motor bolts can be broken.



PICTORIAL 7

( ) Turn the Garage Door Opener Assembly upside down.

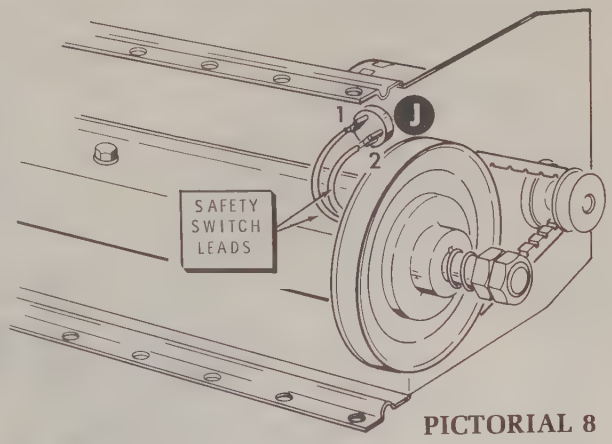
( ) Tighten the V-belt as follows: First raise the motor slightly and tighten the motor mounting hardware. Then refer to the inset drawing on Pictorial 7 and check the belt tension as shown. If necessary, reposition the motor again to obtain the proper belt tension. An overtightened V-belt will bind the motor shaft, overheat the motor, and cause unnecessary wear. Be sure to tighten the nut on the inside motor mounting bracket.

Refer to Pictorial 8 for the following steps.

( ) Connect either safety switch lead to lug 2 of connector J.

( ) Connect the other safety switch lead to lug 1 of connector J.

( ) Position both safety switch leads away from the pulley.



PICTORIAL 8

Refer to Pictorial 9 (Illustration Booklet, Page 6) for the following steps.

( ) Turn the assembly over and position it as shown.

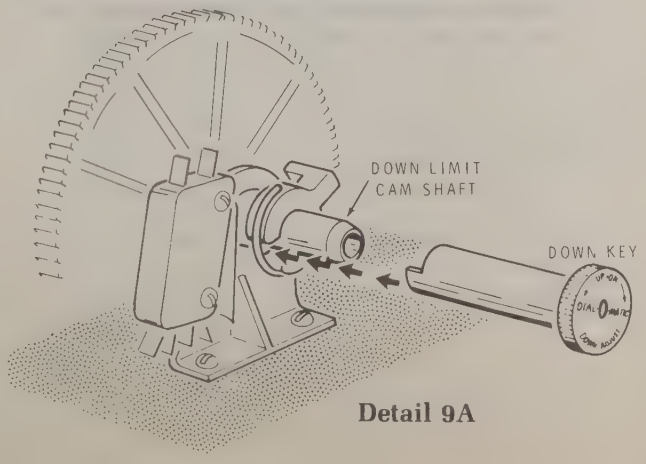
( ) Make sure the trolley is still positioned approximately 4 feet from the end of the track.

( ) Refer to Detail 9A and place the down key onto the down limit cam shaft. Push the key all the way onto the shaft so the small projection fits into the opening between the cam ends.

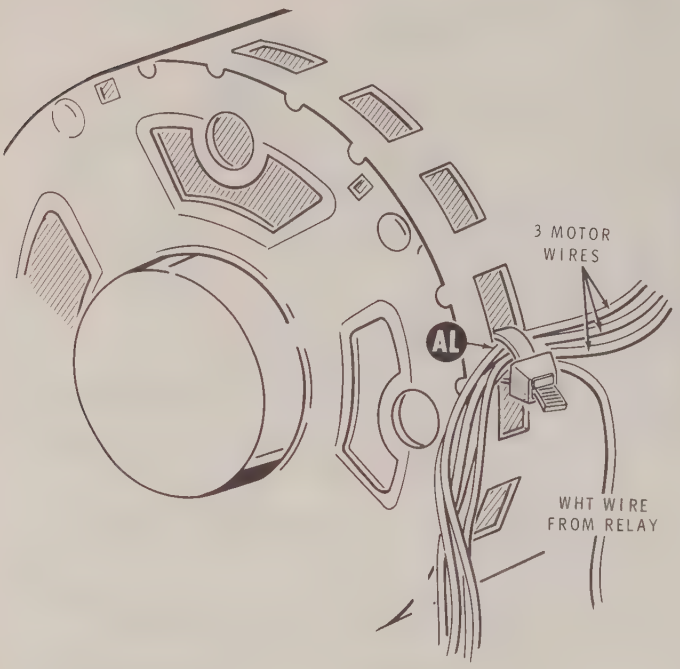
( ) Refer to Part B of the Pictorial and turn the down limit cam counterclockwise until the cam actuates switch AD (two clicks will be heard). Stop when you hear the second click of the switch.

( ) Similarly, place the up key on the up limit cam shaft, and engage the end of the key in the cam opening as shown in Part A of the Pictorial.

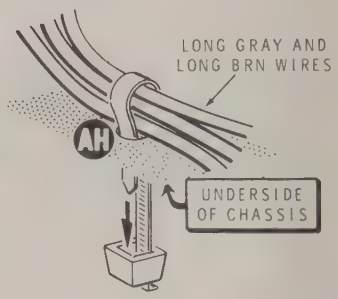
( ) Turn the cam as required so it points toward the upper right-hand corner of the idler bracket as shown in Part A of the Pictorial.



Detail 9A



Detail 10A



Detail 10B

Refer to Pictorial 10 (Illustration Booklet, Page 7) for the following steps.

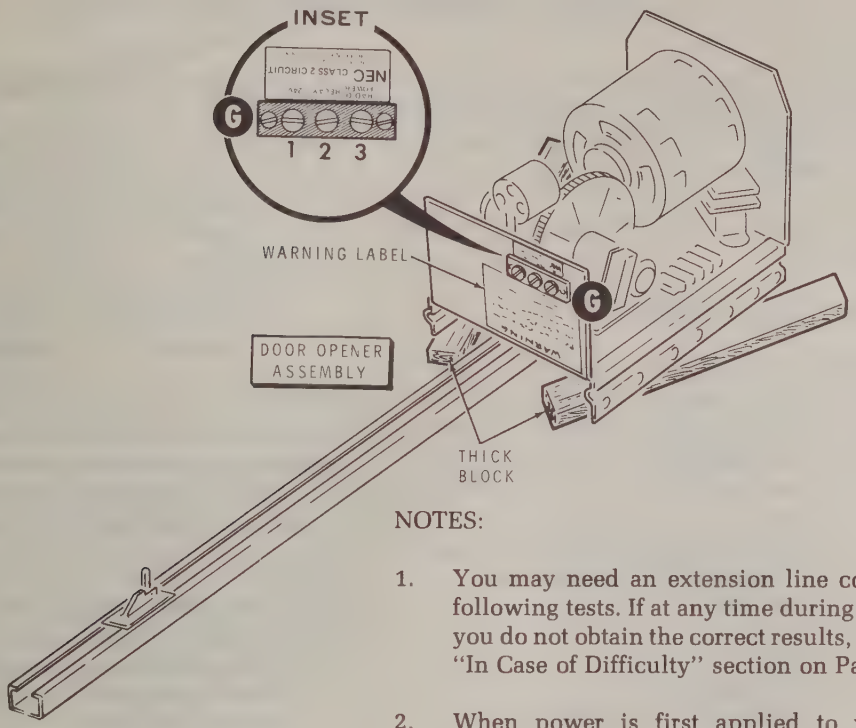
( ) Refer to Detail 10A and pass a cable tie through the motor slots at AL. Gather the three motor wires and the white wire coming from lug 2 of relay Y into the tie. Pull the tie snug and cut off the excess tie length.

( ) Refer to the inset drawing on Pictorial 10 and pass a cable tie around all of the wires at the four arrow points shown in the Pictorial. Straighten the wires between the tie points. Then pull the ties snug and cut off the excess tie lengths.

( ) Refer to Detail 10B and pass the small end of a cable tie up through hole AH in the chassis. Pass this tie over the top of the long gray and the long brown wires coming from the 3-screw terminal strip. Then route it back down through hole AH, fasten the end of the tie on the underside of the chassis, pull it snug, and then cut off any excess tie length.

This completes the "Step-by-Step Assembly" of your Garage Door Opener. NOTE: The cabinet will be assembled and installed later.

INITIAL TEST



PICTORIAL 11

Refer to Pictorial 11 for the following steps.

( ) Place the Door Opener assembly on the garage floor, with the open side of the channel and the power head facing upward. For added stability, place a suitable thick block under each side of the power head as shown. This block must allow the large pulley to be raised from the floor.

NOTE: In the following step, place the label upside down, as the Door Opener assembly is upside down.

( ) Remove the paper backing from one of the "Warning" labels (#390-1060) and place the label **upside down** on the end panel as shown in the Pictorial.

( ) Refer to the inset drawing on Pictorial 11. Remove the paper backing from the NEC label and press the label in place next to the terminal strip as shown.

WARNING: Dangerous AC voltages will be present in the power head assembly during the following tests. Do not attempt to make any adjustments unless you first disconnect the line cord from the AC outlet.

NOTES:

1. You may need an extension line cord for the following tests. If at any time during these tests you do not obtain the correct results, refer to the "In Case of Difficulty" section on Page 43.

2. When power is first applied to your Door Opener, and it activates, you may notice a small amount of smoke from the thermal (light delay) switch on terminal block S; this condition is normal.

( ) Connect the line cord from the power head assembly to the extension cord; then plug the extension cord into an AC outlet. The Door Opener may or may not be activated at this time.

( ) If the Door Opener does not operate, carefully short the "24V" and the "RELAY" screws on terminal strip G together briefly. This should cause the Door Opener to operate and the trolley to travel toward the power head assembly.

( ) When the trolley stops at the power head end of the track, once again briefly short the "24V" and "RELAY" screws of terminal strip G together. The trolley should travel forward and stop 3 to 4 feet from the end of the track.

( ) Disconnect the line cord from the AC source.

This completes the "Initial Test." Proceed to the "Door Opener Installation."

DOOR OPENER INSTALLATION

These instructions were written to make the Door Opener installation a one-man operation. However, if a helper is available, his assistance would probably speed up the installation.

To install and adjust the Door Opener, you will need the following tools:

QUANTITY	DESCRIPTION
2	1/2″ end or box wrenches
1	8″ or 10″ adjustable wrench
1	Pair of pliers
1	Screwdriver
1	Hammer
1	Wood saw
1	Carpenter's level (or straight edge piece of 2″ × 4″ board 2 to 3 feet long)
1	Measuring tape
1	3/16″ drill bit
1	1/4″ drill bit
1	Electric or hand drill
1	Pencil
1	6 or 7 foot stepladder

Place the tools listed above, the remaining parts, and the mechanism assembly in the garage. Be careful not to let dirt get into the parts of the Door Opener.

NOTE: The following instructions are divided into two separate sections; one for folding or one-piece overhead track-type doors, and one for one-piece jamb or pivot-type doors. It is a good idea to preread the installation instructions that apply to your type of door at this time. This will let you determine what additional material (such as boards, nails, or special hardware for mounting to masonry, paneled, or metal surfaces) will be needed to intsall the Door Opener in your garage. Also, make sure an unswitched 120-volt AC outlet is located within 2 feet of where the power head assembly will be installed. This additional material should be obtained locally at this time.

After you conveniently place the Door Opener and all the necessary tools, parts, and mounting material in your garage, proceed with the section that applies to your door.

OVERHEAD TRACK DOORS

( ) Make sure the garage door travels freely and that the counter-balance system is adjusted properly. NOTE: The Garage Door Opener was designed as a device to conveniently open and close your garage door; it is not intended to operate doors that are difficult to open by hand. For this reason, it is important that the door moves freely as it is opened and closed.

WARNING: If it is necessary to adjust the tension of your garage door counterbalance springs, obtain the services of a qualified person, such as a home-builder, to perform this operation. Failure to do so may result in **severe personal injury** and damage to the garage door.

( ) Remove any locking or latching device on your garage door before the Garage Door Opener is installed. You may either remove the locking device or secure its parts so it will not lock the garage door closed.

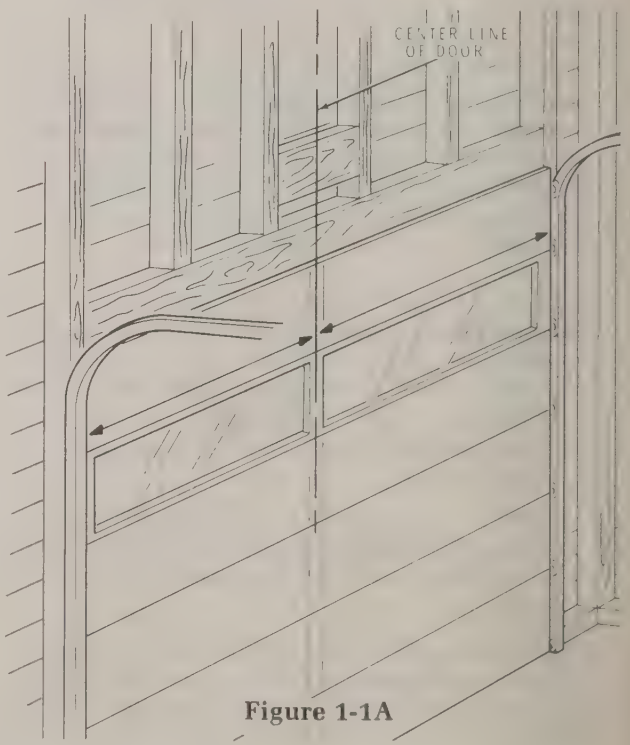


Figure 1-1A

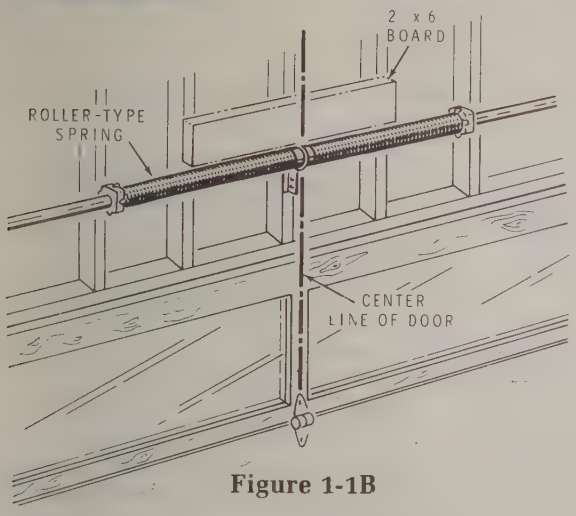


Figure 1-1B

( ) Refer to Figure 1-1A and draw a vertical line on both the center of the garage door and the wall above the door. The center line should be extended up for about 1 foot on the wall.

NOTE: If your garage door has a roller-type counterbalance spring as shown in Figure 1-1B, place the lower edge of the block just above this spring in the following step.

( ) Refer to Figure 1-2 and find the highest point of travel of the garage door as it is opened and closed. This can be done with a carpenter's level or with a straight piece of 2″ × 4″ board. Mark this point on the center line drawn in the previous step.

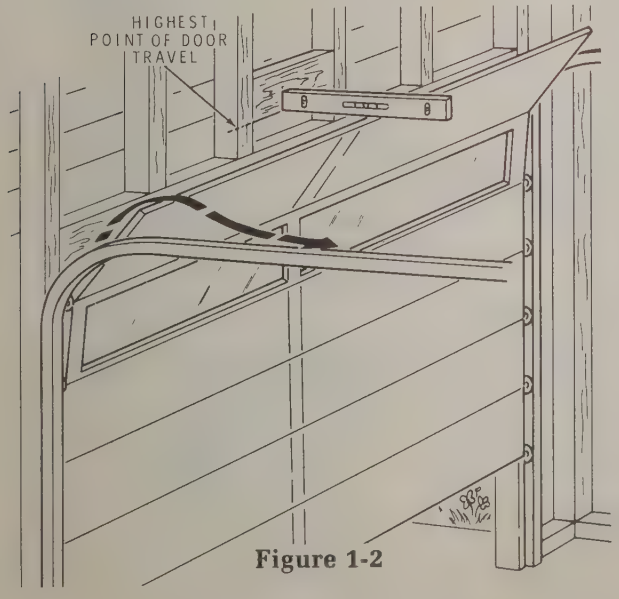


Figure 1-2

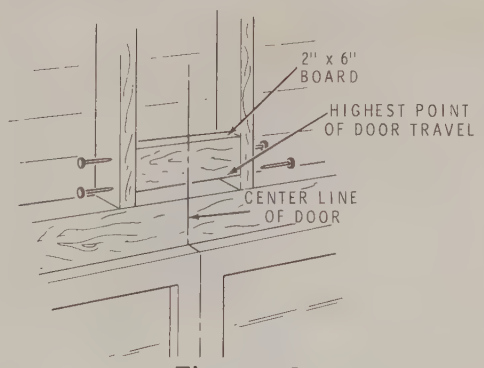


Figure 1-3

NOTE: If the interior of your garage is an uncovered frame construction, complete step 1 to provide a flat mounting surface to support the front of the Door Opener mechanism. If your garage has masonry or paneled walls, complete step 2.

( ) 1. Refer to Figure 1-3 and nail a 2″ × 6″ board between the studs. The bottom edge of this board should be even with the highest point of door travel. Fasten this board securely, since it must support the vertical and lateral thrust of the Door Opener.

( ) 2. Fasten a length of 2″ × 6″ board to the wall as shown in Figure 1-4. The bottom edge of this board should be even with the highest point of door travel. Fasten this board securely, as it must support the vertical and lateral thrust of the Door Opener.

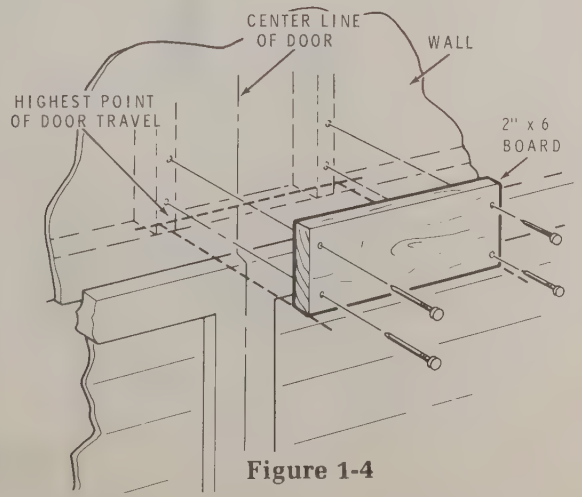


Figure 1-4

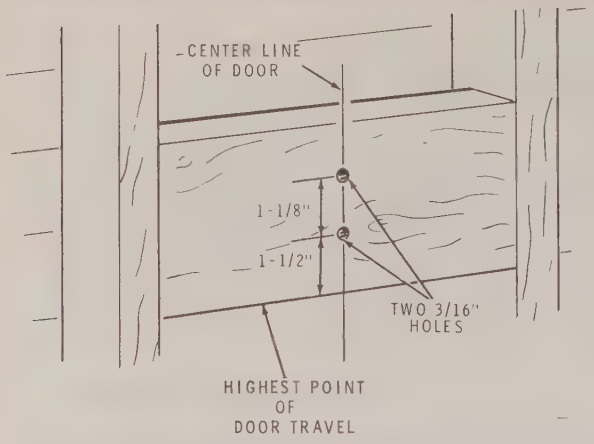


Figure 1-5

( ) Mark the locations for the two mounting holes above the garage door using the dimensions given in Figure 1-5. Predrill these holes with a 3/16″ drill bit.

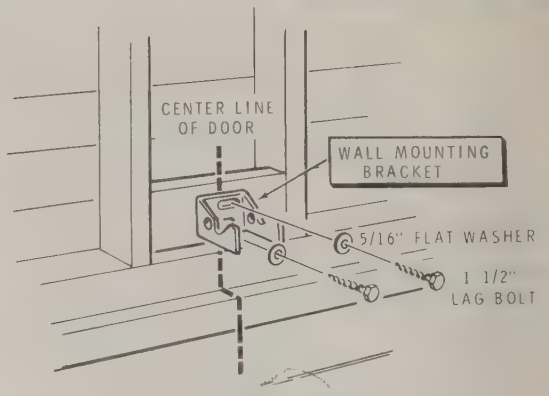


Figure 1-6

( ) Refer to Figure 1-6 and position the holes in the wall-mounting bracket over the predrilled holes in the mounting board. Install the wall-mounting bracket with two 1-1/2″ lag bolts. Use 5/16″ flat washers on the bolts.

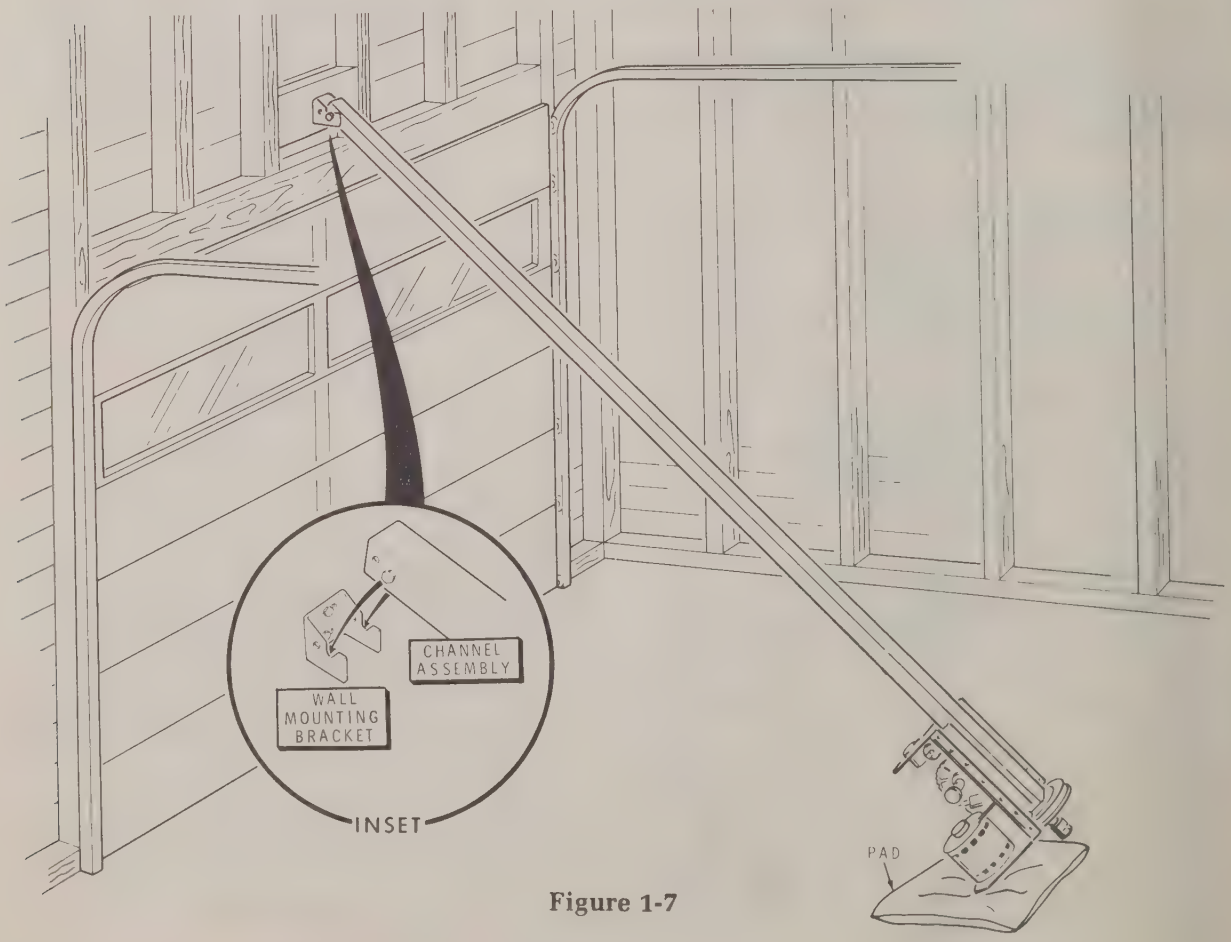


Figure 1-7

Refer to Figure 1-7 for the following steps.

NOTE: Another person will be helpful for the following steps.

( ) Place the power head assembly on a pad on the floor. Raise the front end of the track and hook the bolt heads at the front end of the channel assembly into the notches in the wall-mounting bracket as shown in the inset drawing.

( ) Lift the power head until the channel assembly is parallel with the floor. Then refer to Figure 1-8 and mount the assembly to the wall-mounting bracket with 5/16"-18 × 3" hardware as shown. Do not tighten the hardware at this time.

( ) Refer to Figure 1-9 and raise the garage door and place a length of 2" × 4" board between the door and the Door Opener. Make sure the door is capable of supporting the weight of the Opener. It may be necessary to use a longer 2" × 4" board, or support the door by some other means. A rope from the rafters may assist in relieving the weight from the center of a wide door.

( ) While the Door Opener is supported as shown in Figure 1-9, the center of the track should be over the center line previously marked on the top of the garage door.

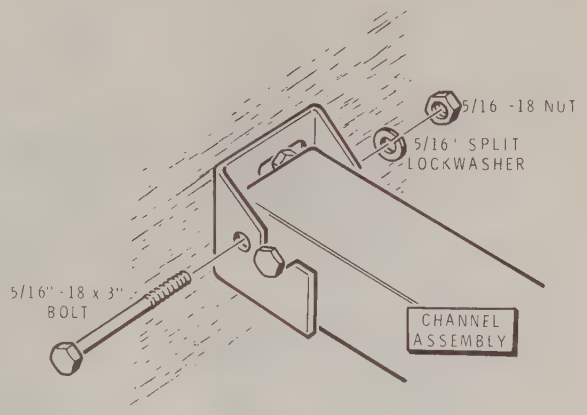


Figure 1-8

NOTE: In the following step, it is not necessary to mount the Door Opener level, but it will look better if it is level and parallel with the horizontal portion of the door tracks.

( ) Place short lengths of board between the 2" × 4" board and the Door Opener to position the Opener level with the horizontal portion of the door tracks. Be careful not to move the Opener while you install the hanger straps in the following steps.

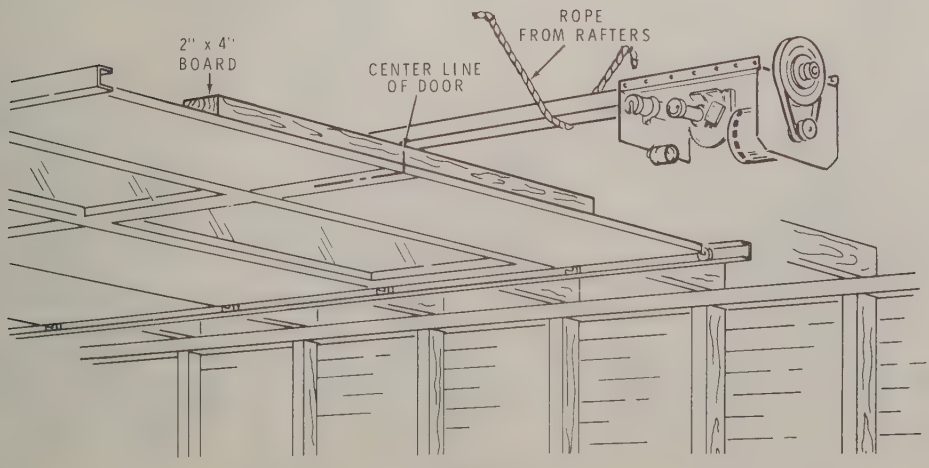


Figure 1-9

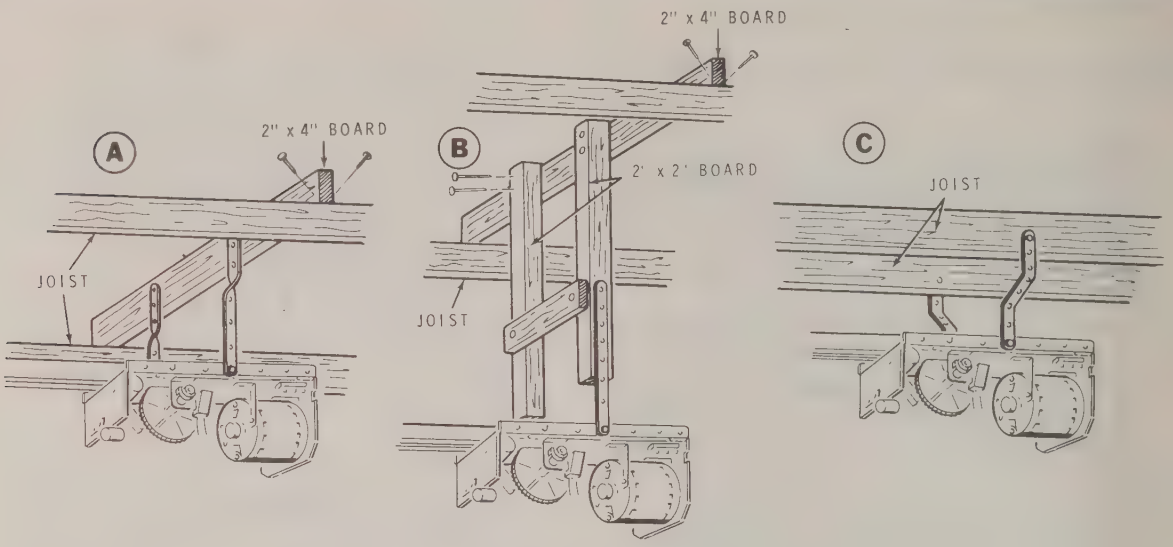


Figure 1-10

( ) Refer to Figures 1-10, 1-11, and 1-12 and determine which installation method will work best in your garage. The type of installation you choose will depend on whether you intend to hang the power head assembly from the ceiling joists or the rafters. The direction the rafters run will also determine the type of installation used. NOTE: If the garage ceiling is closed, it will be necessary to cut through the ceiling material so the hanger straps can be fastened to the ceiling joists.

In the following steps, it may be necessary to twist the straps. The straps can be twisted by clamping one end in a vise and twisting the other end with an adjustable wrench, as shown in Part A of Figure 1-13. If a vise is not available, an adjustable wrench can be used at each end to twist the strap, as shown in Part B of Figure 1-13.

( ) Use 5/16"-18 × 5/8" hardware to mount the hanger straps to the power head assembly as shown in Figure 1-14. Use the mounting holes in the power head assembly that suit your particular installation.

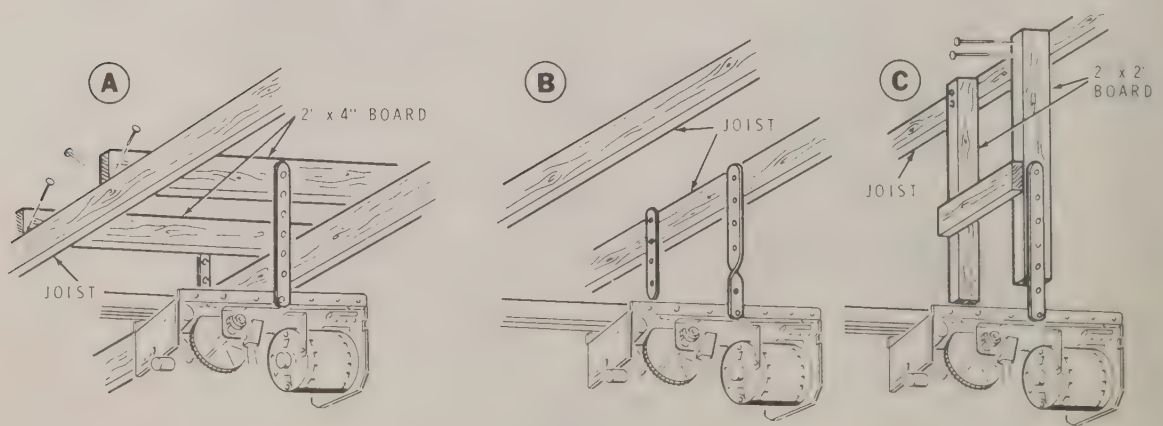


Figure 1-11

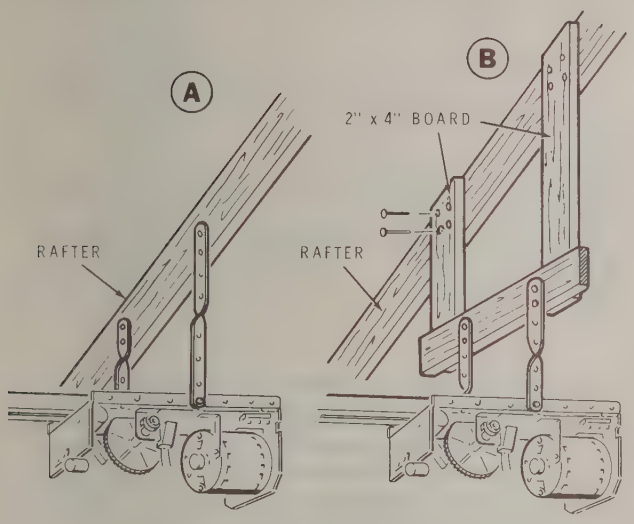


Figure 1-12

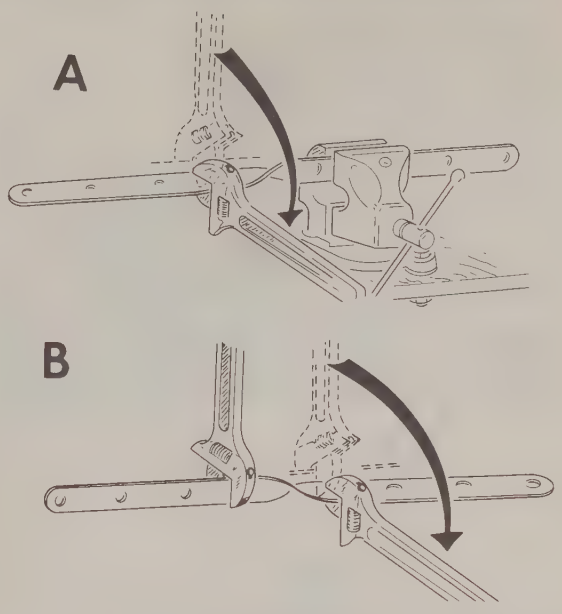


Figure 1-13

( ) Refer to Figures 1-10, 1-11, or 1-12 (depending on the type of installation) and mount the hanger straps to the joists or rafters, as shown in Figure 1-14. Predrill 3/16″ holes in the joists or rafters and use 1-1/2″ lag bolts to mount the hanger straps. NOTE: If the joists are metal, drill holes in them and fasten the hanger straps with bolts, lockwashers, and nuts (not furnished).

( ) After the power head assembly has been fastened to the ceiling, remove the 2″ × 4″ board and prop, if used, from between the door and track assembly.

( ) Close the garage door and tighten the 5/16″-18 × 3″ hardware through the wall-mounting bracket and channel assembly.

NOTE: Since there is a large variation in the types of garage doors, it may be necessary to make your own adapter to mount the door bracket. For example, if your garage has a fiberglass door with a vertical channel at the center, you will have to cut a length of board to fit in this channel. This will allow the door brackets to be positioned out beyond the edges of the channel as shown in Figure 1-15 (Illustration Booklet, Page 7).

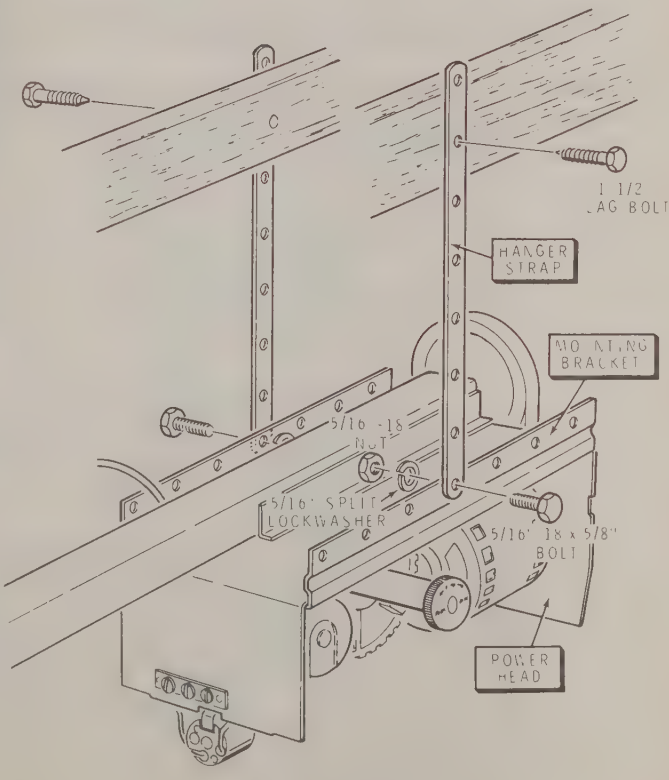


Figure 1-14

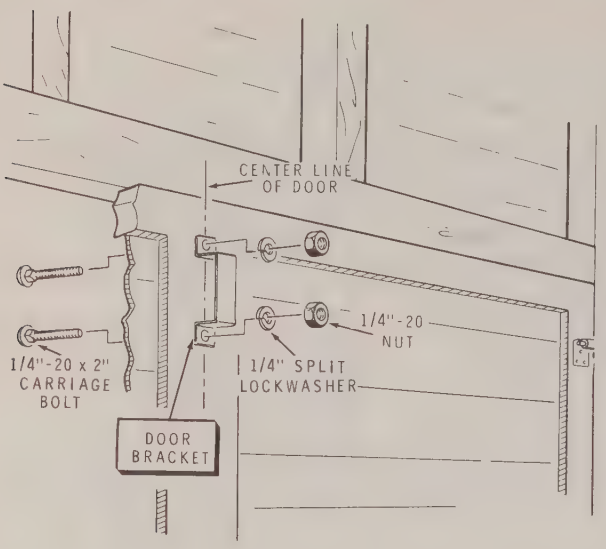


Figure 1-17

Refer to Figure 1-16 (Illustration Booklet, Page 7) for the following steps.

( ) Extend a line from the top door roller through the door center line previously marked.

NOTE: Do not remove any door bracing or reinforcement hardware. To do so may weaken your garage door and cause damage later.

( ) Draw a line through the vertical center line on the door 17" below the bottom of the track.

( ) Mark the door for the two bolt holes using the dimensions in Figure 1-16. Then drill 1/4" holes at these locations.

NOTE: The door bracket can be bolted directly to the metal vertical channel of some fiberglass doors. This eliminates the need for drilling holes in the fiberglass. There are two 1/4"-20 × 1-1/2" bolts furnished which can be used in the next step as shown in Part B of Figure 1-18.

( ) Refer to Figure 1-17 (Part A of Figure 1-18 for fiberglass doors) and mount the door bracket assembly. Use the 1/4"-20 × 2" carriage bolts, 1/4" split lockwashers, and 1/4"-20 nuts. Tighten this hardware until the bolt heads are pulled against the outside of the door.

Pushbutton Switch Installation

You will install the doorbell-type pushbutton switch and its wiring in the following steps. This switch is used to operate the Door Opener from inside the garage. For safety, the pushbutton should be positioned above the reach of small children. Therefore, decide on the best location for this switch in your garage; then proceed as follows:

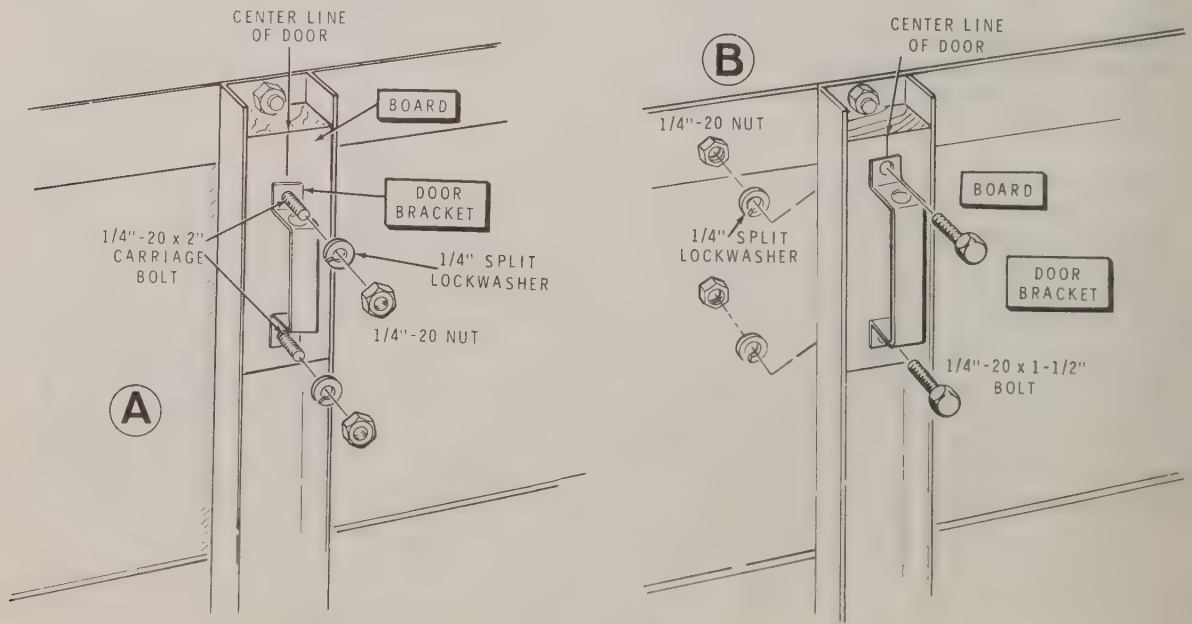


Figure 1-18

( ) Remove 1/2" of insulation from each wire at both ends of the 2-conductor cable as shown in the inset drawing on Figure 1-20.

( ) At one end of the 2-conductor cable, connect either wire to either terminal of the pushbutton switch. Connect the remaining wire to the other terminal of this switch. See Figure 1-19.

( ) Mount the pushbutton switch with the two screws packed with it.

Refer to Figure 1-20 for the following steps.

( ) Route the cable to the power head of the Door Opener assembly. Use the wire staples to anchor the cable as necessary.

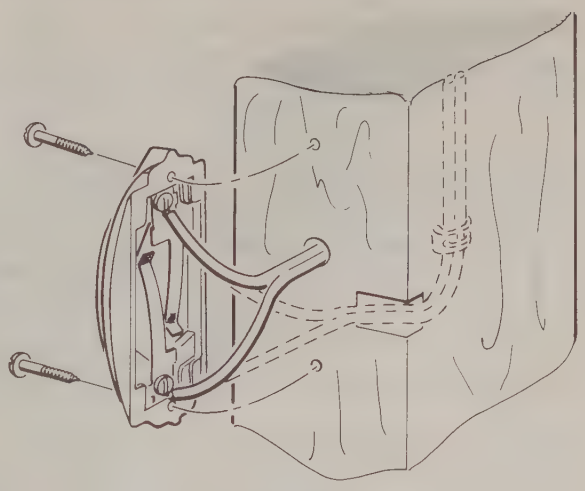


Figure 1-19

NOTES:

1. If the cable is too long, you may either cut off the excess length or roll up the cable so the pushbutton switch can be moved to a new location in the future. If the cable is too short to reach your new switch location, you may splice on an additional length of 2-conductor cable. Obtain the additional cable from a local source.

2. If you have purchased the separate receiver and transmitter(s) to remotely operate your Garage Door Opener, refer to the Receiver Installation instructions at this point. Install the Receiver and wire it to the power-head assembly as described in that Manual. Extra black, brown, and red wire was supplied for this purpose. Then return to this Manual and complete the installation of the Garage Door Opener.

( ) Connect either wire, at the free end of the cable, under screw 1 ("24V") of 3-screw terminal strip G on the power head assembly.

( ) Connect the other wire of this cable under screw 2 ("RELAY") of terminal strip G.

( ) Remove the paper backing from the blue and white identification label. Then press the label onto the chassis near terminal strip G as shown. NOTE: The Model Number and Production Series Number of your kit are shown on this label. Refer to these numbers in any communications you have with the Heath Company about this kit.

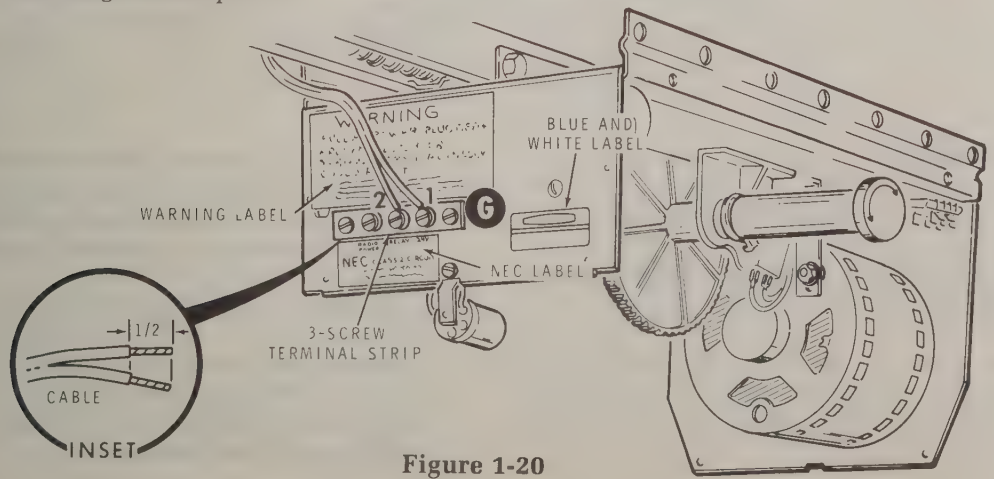


Figure 1-20

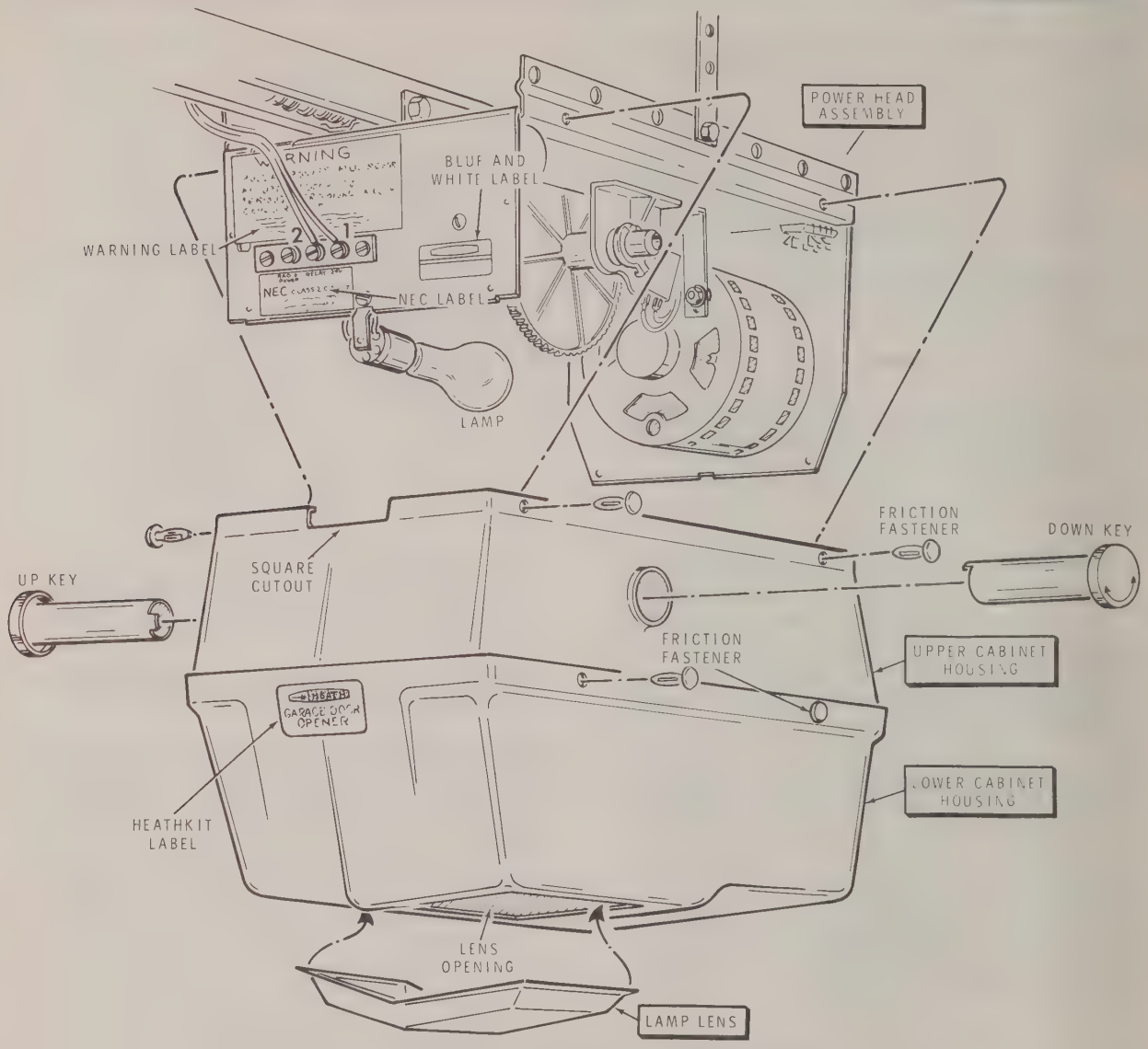


Figure 1-21

Final Assembly

Refer to Figure 1-21 for the following steps.

( ) Temporarily remove the up key and the down key from the power head assembly.

( ) Place a 60 or 75 watt lamp in the lamp socket. Do not use a lamp larger than 75 watts; the heat from a larger lamp could damage the plastic lens.

( ) Position the upper and lower cabinet housings together as shown in Figure 1-21. Be sure the square cutout on the upper housing is at the same end as the lens opening in the lower housing. Secure the lower housing to the upper housing with four friction fasteners as shown.

( ) Position the cabinet housing assembly upward, around the power head assembly. Then secure the cabinet assembly to the two hanger brackets with four friction fasteners.

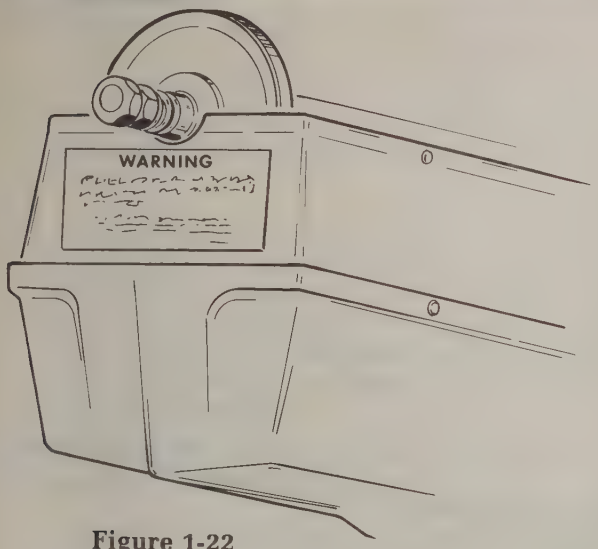


Figure 1-22

( ) Pass the lamp lens upward through the lens opening in the bottom of the cabinet assembly, and then lower it into place so it rests in the opening with its edge flanges inside the cabinet.

( ) Remove the paper backing from the Heathkit label and press it into place on the front of the cabinet assembly as shown in Figure 1-21.

( ) Check the position of the opening on the down limit cam. Place the down key onto the end of the gear shaft and push it firmly into place so the tip of the key fits into the cam opening.

( ) Similarly, place the up key onto the gear shaft and push it into place.

( ) Refer to Figure 1-22. Remove the paper backing from the other red "Warning" label and press it in place on the cabinet just under the large pulley.

NOTE: If the Door Opener does not operate properly when you perform the following steps, disconnect the line cord plug from the AC outlet and refer to the "In Case of Difficulty" section of the Manual.

( ) Connect the line cord plug to a standard 120 VAC outlet. This outlet should be unswitched and within 2 feet of the power head assembly. NOTE: The trolley may or may not move toward the power head when the Door Opener is connected to the AC outlet. If it does move, there is no cause for alarm.

NOTE: The thermal relay in the Door Opener may have a varnish coating which will cause a small amount of smoke the first couple times the Door Opener is operated. This is normal.

WARNING: **Do not** adjust the door opener clutch mechanism without first disconnecting the line cord plug from the AC outlet. Any movement of the clutch or screw assembly, with the line cord connected, can cause the Door Opener to activate. This instantaneous starting of the motor and mechanism could cause **serious personal injury.**

( ) Press the pushbutton switch to activate the Door Opener. The trolley should travel toward the power head assembly and stop approximately 28" from it. NOTE: If the trolley does not move, it may be necessary to tighten the clutch slightly. BE SURE TO DISCONNECT THE LINE CORD FIRST.

( ) Press the pushbutton switch again. The trolley should travel toward the garage door and stop approximately four feet from the end of the track.

( ) Disconnect the line cord.

( ) Refer to Figure 1-23 and temporarily assemble the extension and right and left arms. Use 5/16"-18 × 1" hardware. Do not tighten it at this time.

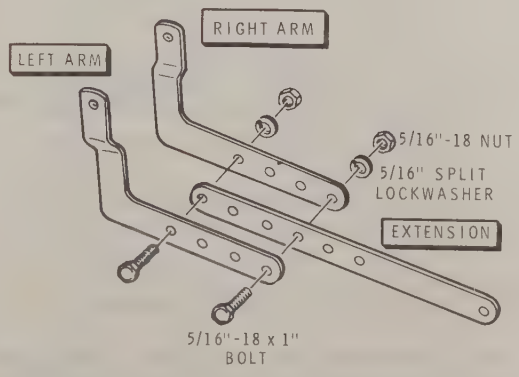


Figure 1-23

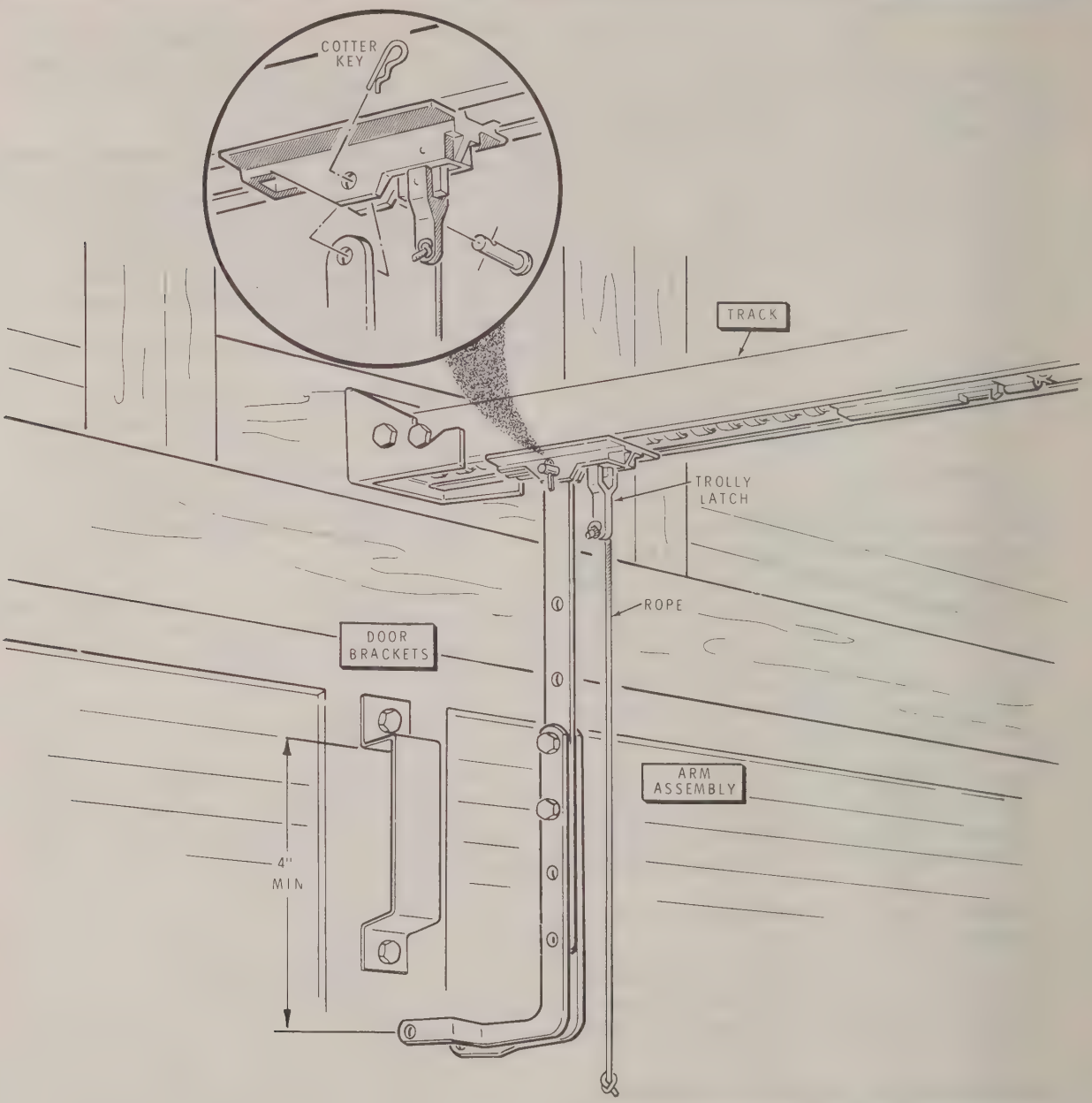


Figure 1-24

Refer to Figure 1-24 for the following steps.

( ) Tie an overhand knot in the end of the short rope. Pass the other end of the rope through the trolley latch as shown in the Figure; then tie an overhand knot in the other end of the rope.

( ) To release the slide pull downward on the rope. The latch will be pulled straight down from the trolley, and it will remain in that position until the rope is tugged rearward to release it.

( ) While the latch is released, pull forward on the rope until the slide comes to a stop at the front end of the track.

( ) Secure the straight end of the arm assembly to the trolley slide with the 5/16″ × 1″ pin with hole and the cotter key. Do not spread the ends of the cotter key at this time. Be sure the arms of the assembly are positioned as shown in Figure 1-24.

( ) Hold the end of the arm assembly against the garage door as shown; then measure the distance from the holes in the door brackets to the hole in the curved arm. This distance should be no less than 4″ and no greater than 6″. If necessary, remove the arm assembly pin and reposition the curved arm.

Refer to Figure 1-25 (Illustration Booklet, Page 8) for the next three steps.

( ) Reinstall the straight end of the arm assembly on the trolley slide with the 5/16″ × 1″ pin and cotter key. Spread the ends of the cotter key to prevent its falling out.

( ) Place the spring into the door bracket. Then slide the pin down through the door bracket and spring. Make sure that the end of the pin with the hole is positioned up.

( ) Align the holes in the arm assembly with the hole in the pin. Then install a 5/16″-18 × 2-1/2″ bolt through the arm assembly and pin (over the top of the spring). Secure the bolt with a 5/16″ -18 locknut. Do not tighten the nut so securely that the arm assembly cannot move freely.

( ) Pull the latch rope rearward toward the power head assembly so the latch snaps upward and lays flat against the underside of the slide.

( ) Raise the garage door upward, as far as necessary, until the trolley slide latches into place on the trolley. Do not attempt to further raise or lower the garage door unless you pull on the rope to disengage the latch.

Adjustment

You will adjust the clutch in the following steps.

WARNING: **Do not** adjust the door opener clutch mechanism without first disconnecting the line cord plug from the AC outlet. Any movement of the clutch or screw assembly, with the line cord connected, can cause the Door Opener to activate. This instantaneous starting of the motor and mechanism could cause **serious personal injury**.

( ) Disconnect the line cord plug from the AC outlet.

Refer to Figure 1-26 (Illustration Booklet, Page 8) for the following steps.

( ) Refer to Part A of the Figure and loosen the locknut.

( ) Loosen the adjustment nut until the spring turns freely.

( ) Tighten the adjustment nut until it just touches the spring. Then tighten it one-half turn.

( ) Refer to Part B of the Figure and hold the adjustment nut in this position; then tighten the locknut against it.

NOTE: In the following steps the clutch will be adjusted to a point where it will not slip as the garage door is operated, unless it is obstructed. Overtightening the clutch adjustment will allow the door to open without clutch slippage, but it will defeat the operation of the safety switch as the door is closed. Also, during the adjustment of the clutch, the door will not fully open or fully close. This is normal and will be adjusted later.

( ) Connect the line cord into the AC outlet.

( ) Press the pushbutton switch to activate the Door Opener. If the motor runs but the door does not rise, **disconnect the line cord from the AC outlet**. Loosen the locknut and tighten the adjustment nut 1/8 turn. Hold the adjustment nut in this position and tighten the locknut against it.

( ) Connect the line cord plug into the AC outlet. The clutch should not slip and the door should rise. If the door fails to rise or the clutch slips, **disconnect the line cord from the outlet** and perform the clutch adjustment again as described in the previous step. Repeat this procedure until the door can be raised and lowered without clutch slippage.

( ) Press the pushbutton switch to lower the door.

NOTES:

1. The Door Opener has a very slight coasting action once the motor stops. Therefore, it is important that the limit switches be adjusted as described in the following steps. Adjusting the

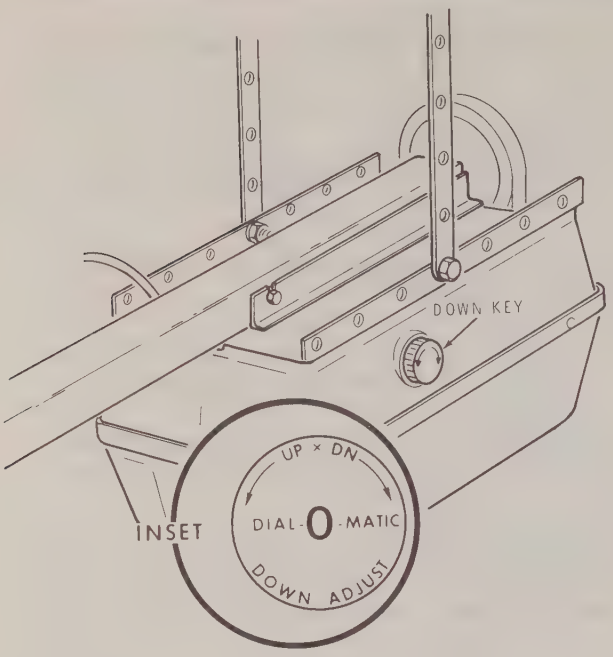


Figure 1-27

door to the fully closed position initially, may cause too much "down-pressure" on the door. Too much down pressure could cause the door to automatically reverse and return to its open position.

2. If you rotate either of the cams counterclockwise past the end of the limit switch lever, continue turning the cam in the same direction until it is in the desired position.

( ) Refer to Figure 1-27 and rotate the down key slowly in the direction indicated by the DOWN arrow. As this cam is rotated, the Door Opener will turn on and lower the door. Continue turning the cam slowly until the door is approximately 1" from the floor.

( ) Open and close the door. Further adjustment of the DOWN-LIMIT switch may be necessary, but make only a slight adjustment. Then open and close the door again. Proper adjustment is obtained when the door coasts to its fully closed position.

( ) Press the pushbutton switch to open the door.

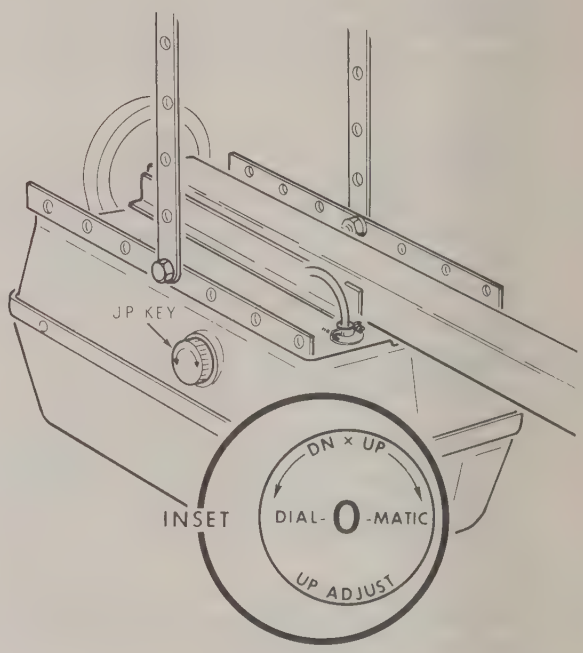


Figure 1-28

( ) Refer to Figure 1-28 and turn the up key in the indicated UP direction. Adjust the up-limit cam until the door is approximatley 1" from its fully open position.

To check for proper operation of the safety switch, perform the following steps.

( ) Stand near the garage door. Then have someone depress the pushbutton switch to lower the door.

( ) As the bottom edge of the door comes downward, grasp the edge of the door to restrain its downward travel. The door should reverse its direction of travel.

Your Garage Door Opener is now adjusted and ready to use. To help you keep the Opener in good operating condition, read through the "Maintenance" section of the Manual. If the Opener fails to operate or if a problem arises, refer to the "In Case of Difficulty" section on Page 43.

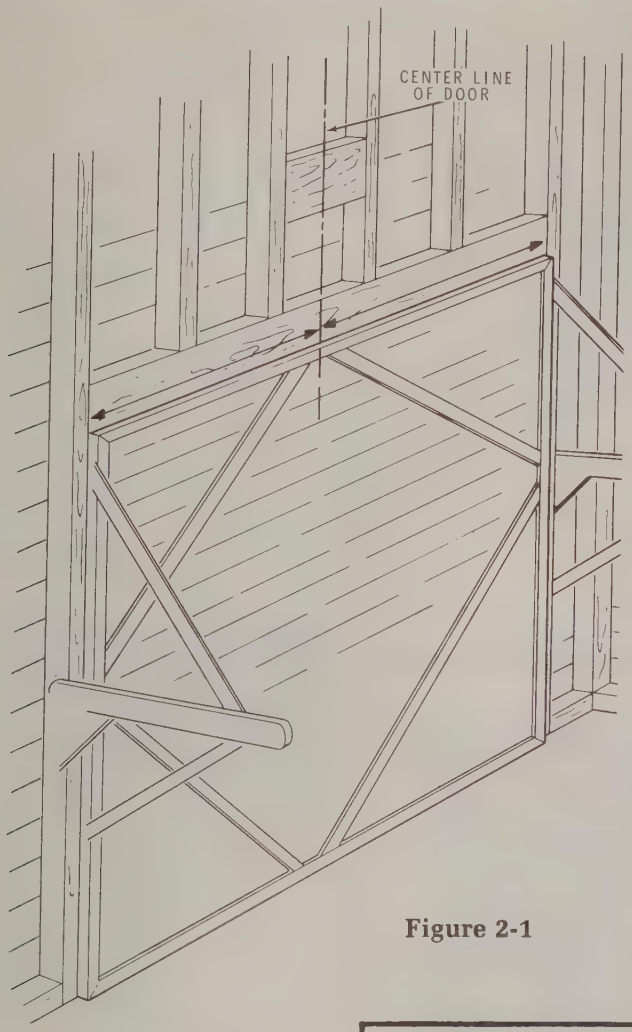


Figure 2-1

WARNING: If it is necessary to adjust the tension of your garage door counterbalance springs, obtain the services of a qualified person, such as a home-builder, to perform this operation. Failure to do so may result in **severe personal injury** and damage to the garage door.

JAMB AND PIVOT DOORS

NOTE: To complete the installation of your Garage Door Opener on this type of door, you will need Accessory Kit Model GDA-3209-2.

( ) Make sure the garage door travels freely and the counterbalance system is adjusted properly. NOTE: The Garage Door Opener was designed as a device to conveniently open and close your garage door; it is not intended to operate doors that are difficult to open by hand. For this reason, it is important that the door move freely as it is opened and closed.

( ) Remove any locking or latching device on your garage door before the Garage Door Opener is installed. You may either remove the locking device or secure its parts so it will not lock the garage door closed.

( ) Refer to Figure 2-1 and mark a vertical line on both the center of the door and the wall above the door. Extend this line up for about three feet on the wall.

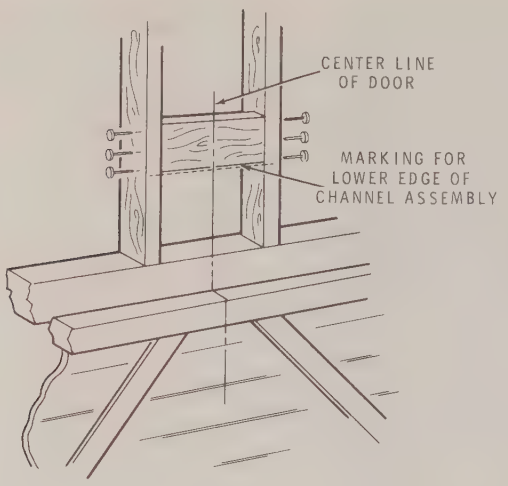


Figure 2-3

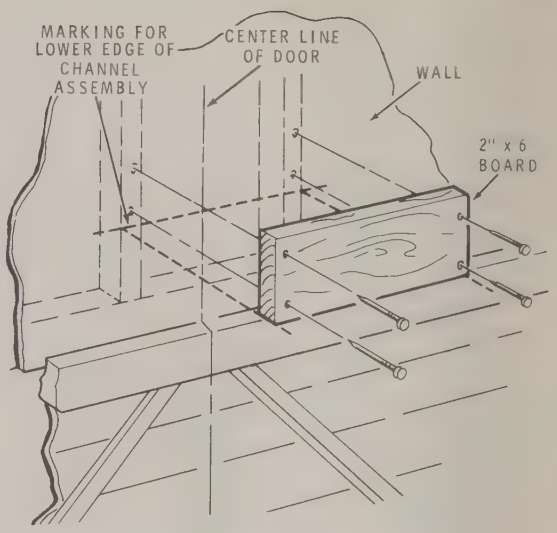


Figure 2-4

Refer to Figure 2-2 (Illustration Booklet, Page 9) for the following steps.

NOTE: The aid of another person will be very helpful in performing the following steps.

( ) Prop the power head end of the Door Opener up just high enough to provide head clearance and to clear the top of your car.

( ) Place the front end of the channel assembly on the center line and against the front of the garage. Position this end of the track to allow 1/2" of clearance above the garage door at its highest point of travel.

( ) Lower the door and mark a line on the wall at the lower edge of the channel assembly.

( ) Lower the Door Opener to the floor.

NOTE: If the interior of your garage is an uncovered frame construction, complete Step 1 to provide a flat mounting surface to support the front of the Door Opener. If your garage has masonry or paneled walls, complete Step 2.

( ) 1. Refer to Figure 2-3 and nail a length of 2" × 6" board between the studs. The bottom edge of this board should be even with the highest point of door travel. Fasten this board securely, since it must support the vertical and lateral thrust of the Door Opener.

( ) 2. Fasten a length of 2" × 6" board to the wall as shown in Figure 2-4. The bottom edge of this board should be even with the highest point of door travel. Fasten this board securely, since it must support the vertical and lateral thrust of the Door Opener.

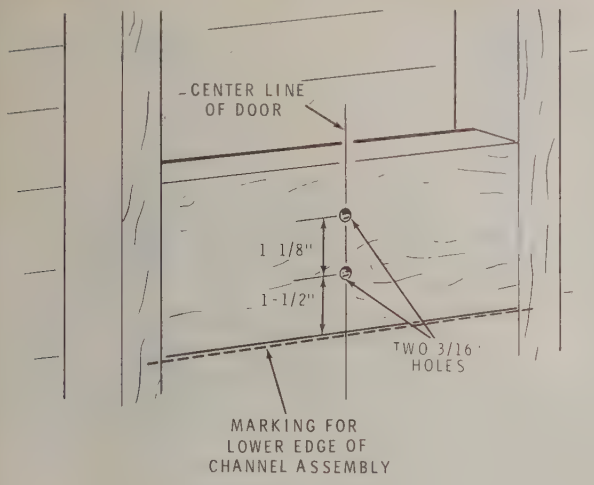


Figure 2-5

( ) Mark the locations for the two mounting holes above the garage door using the dimensions given in Figure 2-5. Predrill these holes with a 3/16″ drill bit.

( ) Refer to Figure 2-6 and position the holes in the wall-mounting bracket over the predrilled holes in the mounting board. Install the wall-mounting bracket with two 1-1/2″ lag bolts. Use a 5/16″ flat washer on each bolt.

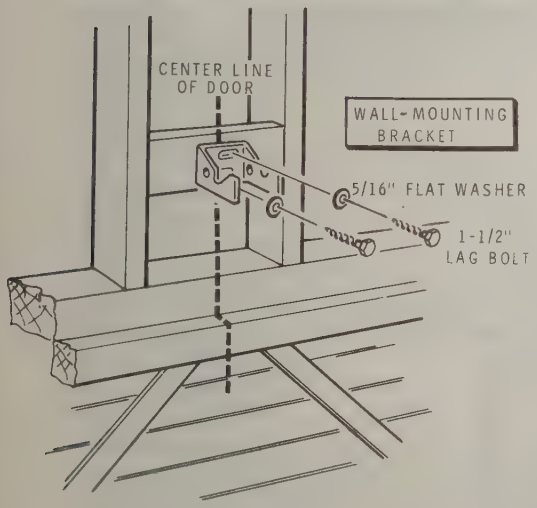


Figure 2-6

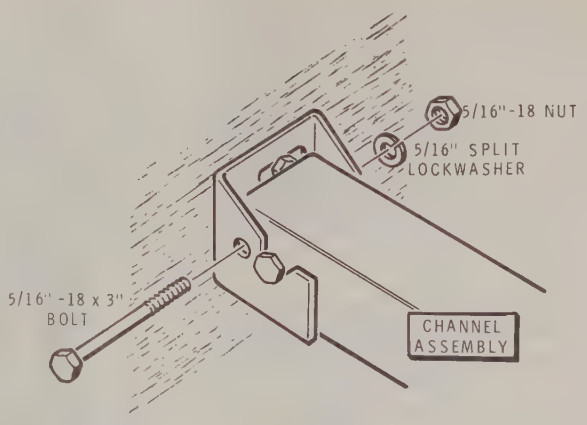


Figure 2-7

Again refer to Figure 2-2 for the following steps.

( ) Prop the power head end of the Door Opener up as shown. Hook the bolt heads at the front end of the channel assembly into the notches of the wall-mounting bracket.

( ) Refer to Figure 2-7 and mount the assembly to the wall-mounting bracket with 5/16″-18 × 3″ hardware as shown. Do not tighten the hardware at this time.

( ) Open the garage door and make sure there is still 1/2″ of clearance between the track and the door at its highest point of travel. The track should also be over the center line that was previously marked on the top of the door.

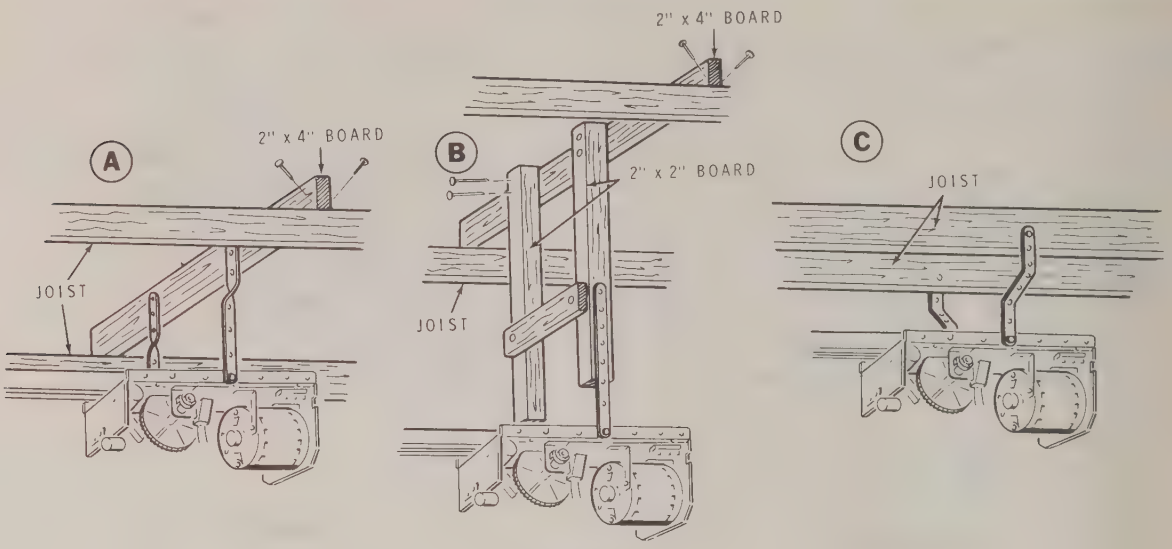


Figure 2-8

NOTE: Be careful not to move the Door Opener while you install the hanger straps in the following steps.

( ) Refer to Figures 2-8, 2-9, and 2-10, and determine which installation method will work best in your garage. The type of installation you choose will depend on whether you intend to hang the power head assembly from the ceiling joists or the rafters. The direction the rafters run will also determine the type of installation used. NOTE: If the garage ceiling is closed, it will be necessary to cut through the ceiling material so the hanger straps can be fastened to the ceiling joists.

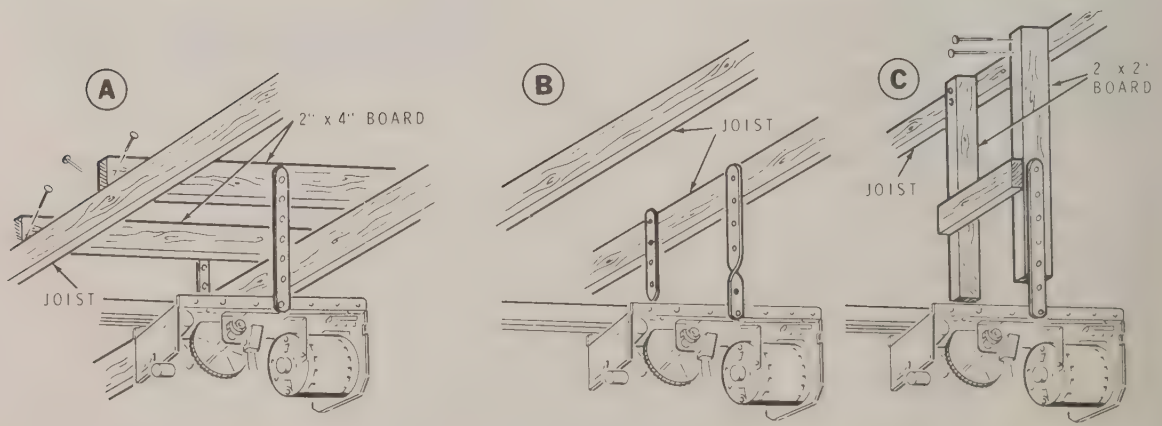


Figure 2-9

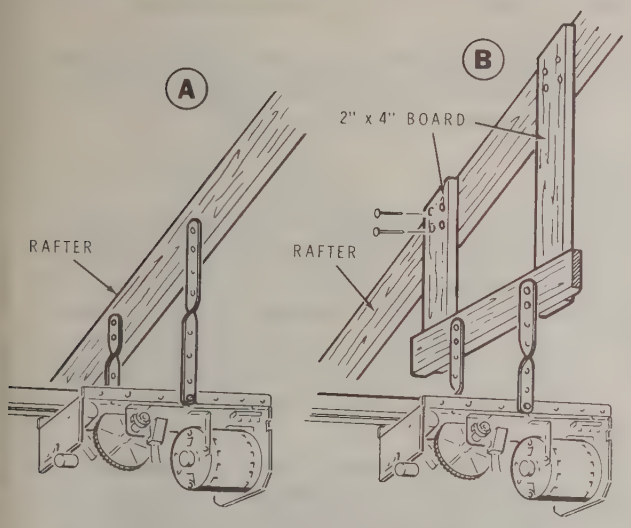


Figure 2-10

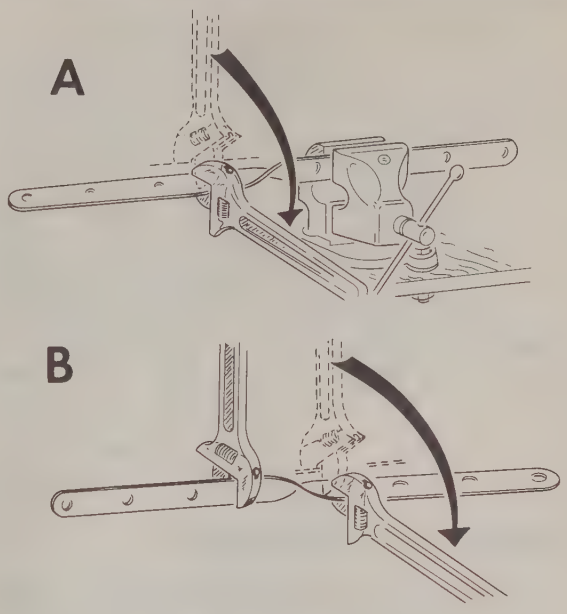


Figure 2-11

In the following steps, it may be necessary to twist the straps. The straps can be twisted by clamping one end in a vise and twisting the other end with an adjustable wrench, as shown in Part A of Figure 2-11. If a vise is not available, an adjustable wrench can be used at each end to twist the strap, as shown in Part B of Figure 2-11.

( ) Use 5/16″-18 × 5/8″ hardware to mount the hanger straps to the power head assembly as shown in Figure 2-12. Use the mounting holes in the power head assembly that suit your particular installation.

( ) Refer to Figures 2-8, 2-9, or 2-10, depending on the type of installation, and mount the hanger straps to the joists or rafters as shown in Figure 2-12. Predrill 3/16″ holes in the joists or rafters and use 1-1/2″ lag bolts to mount the hanger straps. NOTE: If the joists are metal, drill holes in them and fasten the hanger straps with bolts and nuts (not furnished).

( ) After the power head assembly has been fastened to the ceiling, remove the prop from under the Door Opener.

( ) Close the garage door and tighten the 5/16″-18 × 3″ hardware through the wall-mounting bracket and channel assembly.

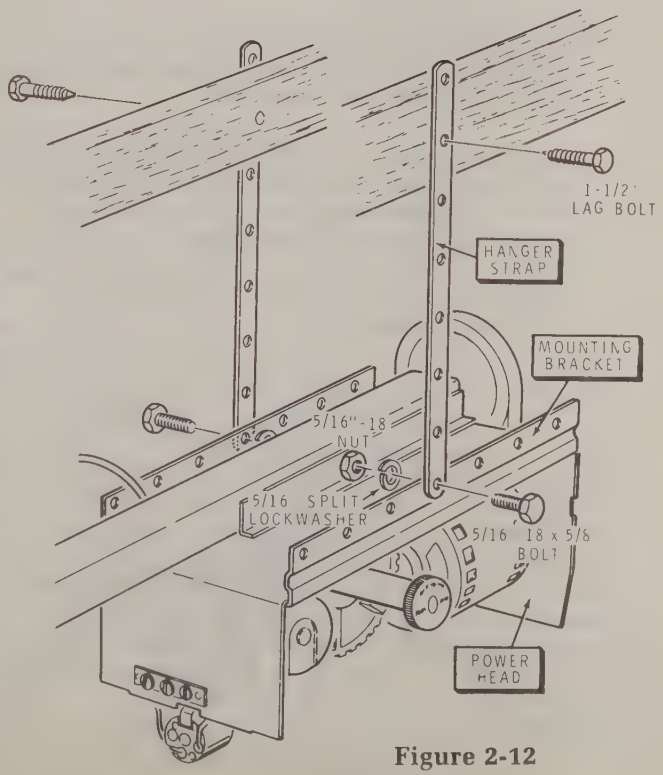


Figure 2-12

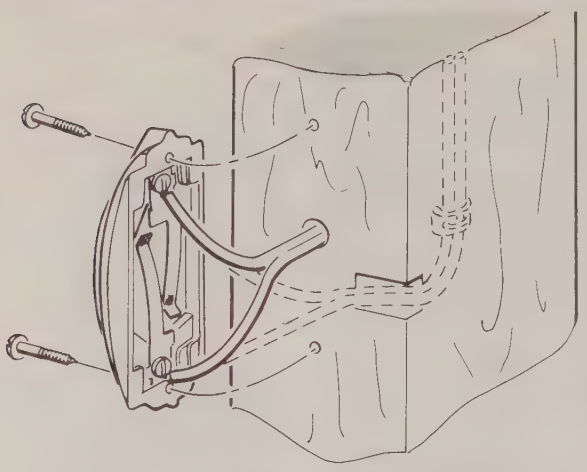


Figure 2-13

Pushbutton Switch Installation

You will install the doorbell-type pushbutton switch and its wiring in the following steps. This switch is used to operate the Door Opener from inside the garage. For safety, be sure to position the switch above the reach of small children. Therefore, decide on the best location for this switch in your garage; then proceed as follows:

( ) Remove 1/2" of insulation from each wire at both ends of the 2-conductor cable as shown in the inset drawing on Figure 2-14.

( ) At one end of the 2-conductor cable, connect either wire to either terminal of the pushbutton switch. Connect the remaining wire to the other terminal of this switch. See Figure 2-13.

( ) Mount the pushbutton switch with the two screws packed with it.

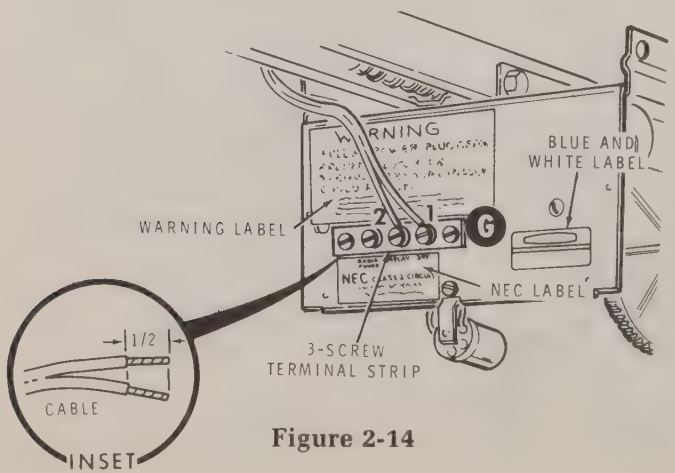


Figure 2-14

Refer to Figure 2-14 for the following steps.

( ) Route the cable to the power head of the Door Opener. Use the wire staples to anchor the cable to the wall.

NOTES:

1. If the cable is too long, you may either cut off the excess length or roll up the cable so the pushbutton switch can be moved to a new location in the future. If the cable is too short to reach your new switch location, you may splice on an additional length of 2-conductor cable. Obtain the additional cable from a local source.

2. If you have purchased the separate receiver and transmitter(s) to remotely operate your Garage Door Opener, refer to the Receiver Installation instructions at this point. Install the Receiver and wire it to the power-head assembly as described in that Manual. Extra black, brown, and red wire was supplied for this purpose. Then return to this Manual and complete the installation of the Garage Door Opener.

( ) Connect either wire at the free end of the cable under screw 1 ("24V") of 3-screw terminal strip G on the power head assembly.

( ) Connect the other wire of this cable under screw 2 ("RELAY") of terminal strip G.

( ) Remove the paper backing from the blue and white identification label. Then press the label onto the chassis near the lower right side as shown. NOTE: The Model Number and Production Series Number of your kit are shown on this label. Refer to these numbers in any communications you have with the Heath Company about your kit.

Final Assembly

Refer to Figure 2-15 for the following steps.

( ) Temporarily remove the up key and the down key from the power head assembly.

( ) Place a 60 or 75 watt lamp in the lamp socket. Do not use a lamp larger than 75 watts; the heat from a larger lamp could damage the plastic lens.

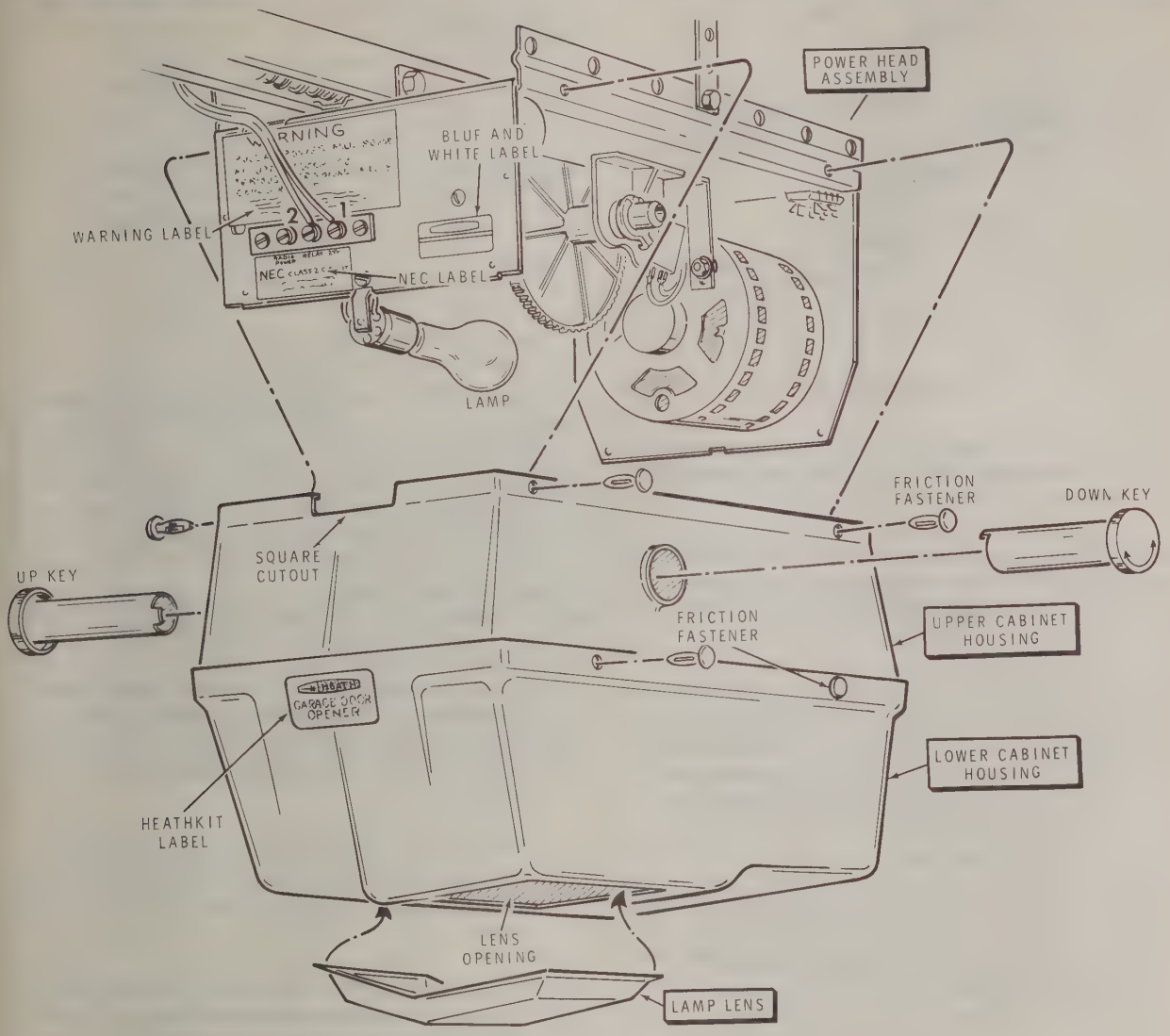


Figure 2-15

( ) Position the upper and lower cabinet housings together as shown in Figure 2-15. Be sure the square cutout on the upper housing is at the same end as the lens opening in the lower housing. Secure the lower housing to the upper housing with four friction fasteners as shown.

( ) Position the cabinet housing assembly upward, around the power head assembly. Then secure the cabinet assembly to the two hanger brackets with four friction fasteners.

( ) Pass the lamp lens upward through the lens opening in the bottom of the cabinet assembly, and then lower it into place so it rests in the opening with its edge flanges inside the cabinet.

( ) Remove the paper backing from the Heathkit label and press it into place on the front of the cabinet assembly as shown in Figure 2-15.

( ) Check the position of the opening on the down limit cam. Place the down key onto the end of the gear shaft and push it firmly into place so the tip of the key fits into the cam opening.

( ) Similarly, place the up key onto the gear shaft and push it into place.

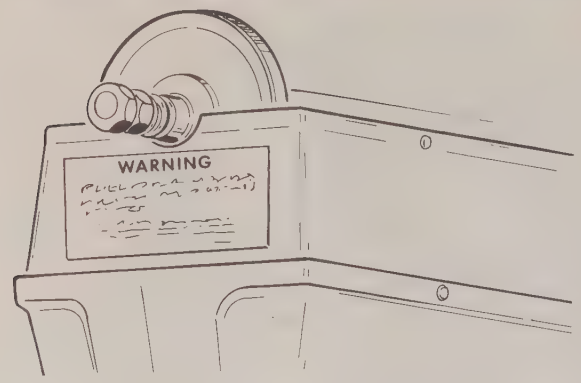


Figure 2-16

( ) Refer to Figure 2-16. Remove the paper backing from the red "Warning" label and press sit in place on the cabinet just under the large pulley.

NOTE: If the Door Opener does not operate properly when you perform the following steps, disconnect the line cord plug from the AC outlet and refer to the "In Case of Difficulty" section of the Manual.

( ) Connect the line cord plug to a standard 120 VAC outlet. This outlet should be unswitched and within 2 feet of the power head assembly. NOTE: The trolley may or may not move toward the power head when the Door Opener is connected to the AC outlet. If it does move, there is no cause for alarm.

NOTE: The thermal relay in the Door Opener may have a varnish coating which will cause a small amount of smoke the first couple times the Door Opener is operated. This is normal.

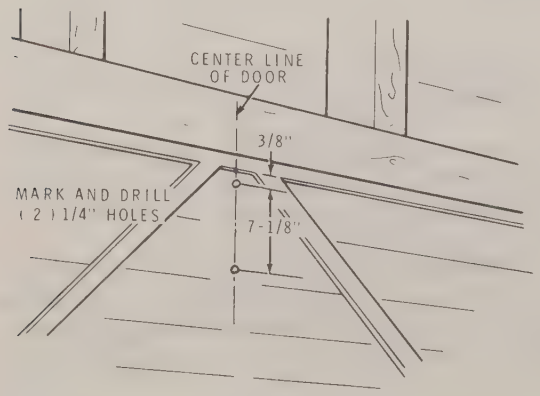


Figure 2-17

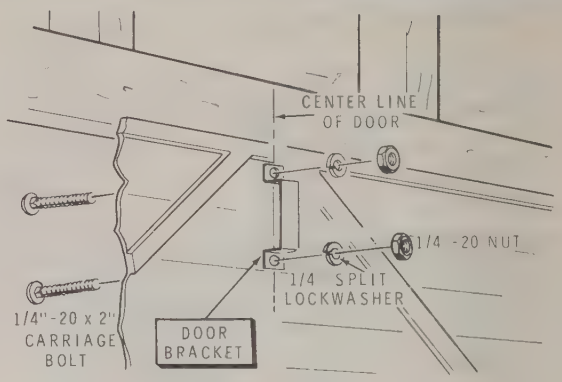


Figure 2-18

WARNING: **Do not** adjust the door opener clutch mechanism without first disconnecting the line cord plug from the AC outlet. Any movement of the clutch or screw assembly, with the line cord connected, can cause the Door Opener to activate. This instantaneous starting of the motor and mechanism could cause **serious personal injury**.

( ) Press the pushbutton switch to activate the Door Opener. The trolley should travel toward the power head assembly and stop approximately 28" from it. NOTE: If the trolley does not move, it may be necessary to tighten the clutch slightly.

( ) Press the pushbutton switch again. The trolley should travel toward the garage door and stop approximately four feet from the end of the track.

( ) Refer to Figure 2-17 and mark the locations for the two bolt holes on the garage door. Use the door bracket as a template. Then drill 1/4" holes at these locations.

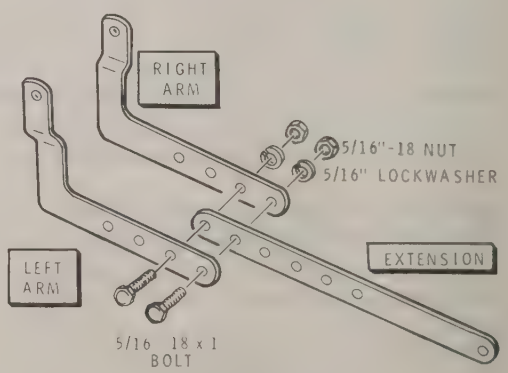


Figure 2-19

( ) Refer to Figure 2-18 and mount the door brackets. Use the 1/4"-20 × 2" carriage bolts, 1/4" split lockwashers, and 1/4"-20 nuts. Tighten this hardware until the bolt heads are pulled against the outside of the door.

( ) Refer to Figure 2-19 and assemble the extension and right and left arms. Use 5/16"-18 × 1" hardware.

Refer to Figure 2-20 for the following steps.

( ) Tie an overhand knot in one end of the short rope. Pass the other end of the rope through the trolley latch; then tie an overhand knot in the other end of the rope.

( ) To release the slide pull downward on the rope. The latch will be pulled straight down from the trolley, and it will remain in that position until the rope is tugged rearward to release it.

( ) Pull forward on the rope until the slide comes to a stop at the front end of the track.

( ) Secure the end of the arm assembly to the trolley slide with the 5/16" × 1" pin with hole and the cotter key. Spread the ends of the cotter key to be sure it will not fall out.

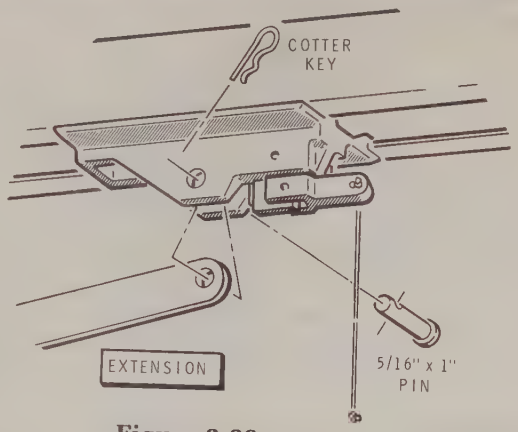


Figure 2-20

Refer to Figure 2-21 for the following steps.

( ) Place the spring into the door bracket. Then slide the pin down through the door bracket and spring. Make sure that the end of the pin with the hole is positioned up.

( ) Align the holes in the arm assembly with the hole in the pin. Then install a 5/16"-18 × 2-1/2" bolt through the arm assembly and pin (over the top of the spring). Secure the bolt with 5/16"-18 locknut. Do not tighten the nut so securely that the arm assembly cannot move freely.

( ) Pull the latch rope rearward toward the power head assembly so the latch snaps upward and lays flat against the underside of the slide.

( ) Raise the garage door upward, as far as necessary, until the trolley slide latches into place on the trolley. Do not attempt to further raise or lower the garage door unless you pull on the rope to disengage the latch.

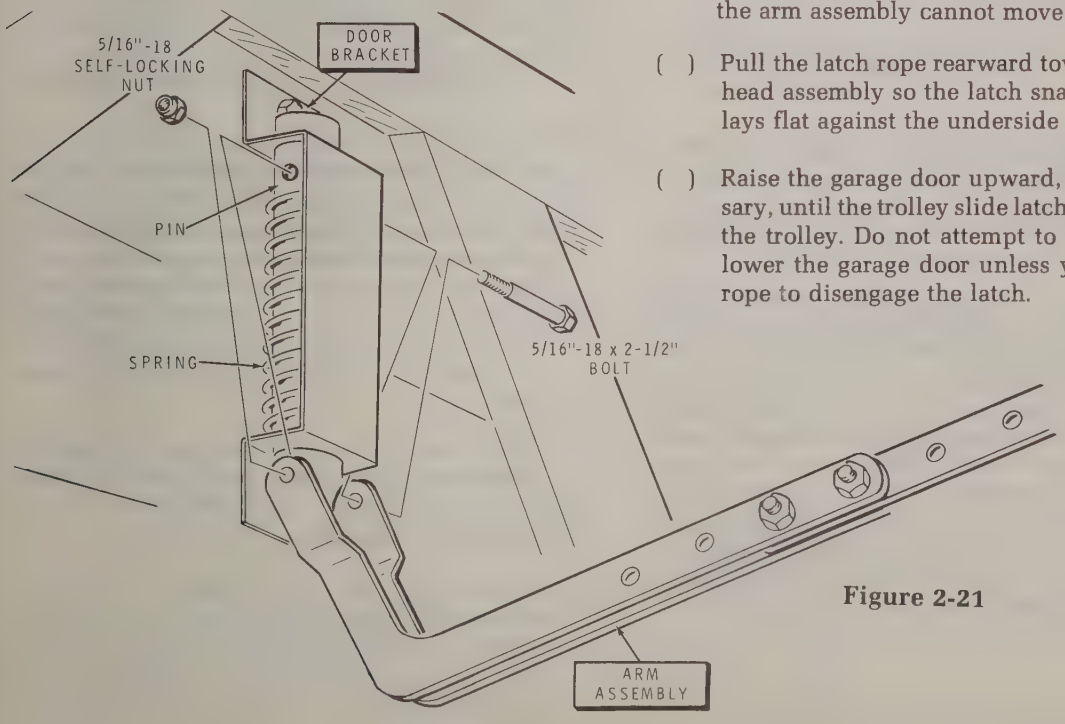


Figure 2-21

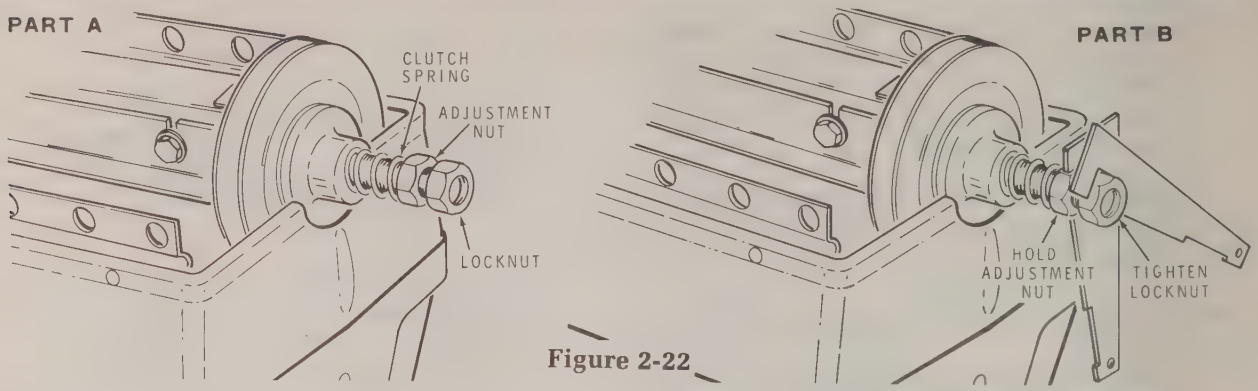


Figure 2-22

Adjustment

You will adjust the clutch in the following steps.

WARNING: **Do not** adjust the door opener clutch mechanism without first disconnecting the line cord plug from the AC outlet. Any movement of the clutch or screw assembly, with the line cord connected, can cause the Door Opener to activate. This instantaneous starting of the motor and mechanism could **cause personal injury**.

( ) Disconnect the line cord plug from the AC outlet.

Refer to Figure 2-22 for the following steps.

( ) Refer to Part A of the Figure and loosen the locknut.

( ) Loosen the adjustment nut until the spring turns freely.

( ) Tighten the adjustment nut until it just touches the spring. Then tighten it one-half turn.

( ) Refer to Part B of the Figure and hold the adjustment nut in this position; then tighten the locknut against it.

NOTE: In the following steps, the clutch will be adjusted to a point where it will not slip as the garage door is operated, unless it is obstructed. Overtightening the clutch adjustment will allow the door to open without clutch slippage, but it will defeat the operation of the safety switch as the door is closed. Also, during the adjustment of the clutch, the door will not fully open or fully close. This is normal and will be adjusted later.

( ) Connect the line cord into the AC outlet.

( ) Press the pushbutton switch to activate the Door Opener. If the motor runs but the door does not rise, **disconnect the line cord from the AC outlet**. Loosen the locknut and tighten the adjustment nut 1/8 turn. Hold the adjustment nut in this position and tighten the locknut against it.

( ) Connect the line cord plug into the AC outlet. The clutch should not slip when the Door Opener is activated and the door should rise. If the door fails to rise or the clutch slips, **disconnect the line cord from the AC outlet** and perform the clutch adjustment again as described in the previous step. Repeat this procedure until the door can be raised and lowered without clutch slippage.

( ) Press the pushbutton switch to lower the door.

NOTES:

1. The Door Opener has a very slight coasting action once the motor stops. Therefore, it is important that the limit switches be adjusted as described in the following steps. Adjusting the door to the fully closed position initially, may cause too much "down-pressure" on the door. Too much down-pressure could cause the door to automatically reverse and return to its open position.

2. If you rotate either of the cams counterclockwise past the end of the limit switch lever, continue turning the cam in the same direction until it is in the desired position.

( ) Refer to Figure 2-23 and rotate the down key slowly in the direction indicated by the DOWN arrow. As this cam is rotated, the Door Opener will turn on and lower the door. Continue turning the cam until the door is approximately 1" from the floor.

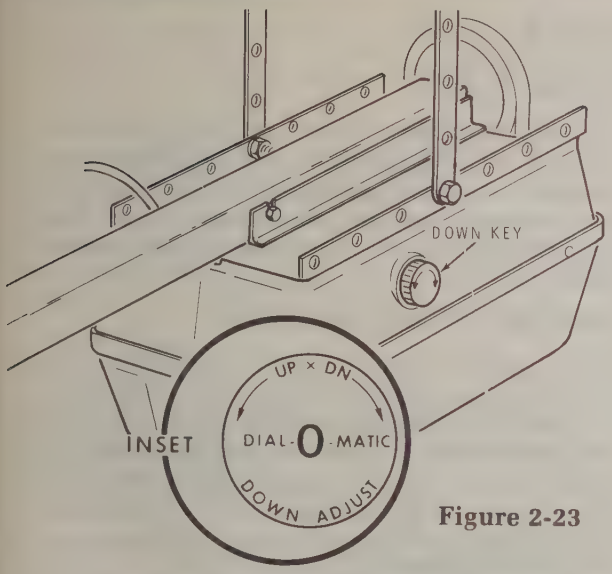


Figure 2-23

( ) Open and close the door. Further adjustment of the DOWN-LIMIT switch may be necessary, but make only a slight adjustment. Then open and close the door again. Proper adjustment is obtained when the door coasts to its fully closed position.

( ) Press the pushbutton switch to open the door.

( ) Refer to Figure 2-24 and turn the up key in the indicated UP direction. Adjust the up limit cam until the door is approximately 1" from its fully open position. See the inset drawing.

NOTE: Before you perform the following step, refer to Figure 2-25. Your garage door may be damaged if the up-limit is improperly adjusted. The door bracket assembly must be above a line between the trolley and the center of the pivot. If the door bracket assembly is below this line, the door will be pushed downward instead of forward.

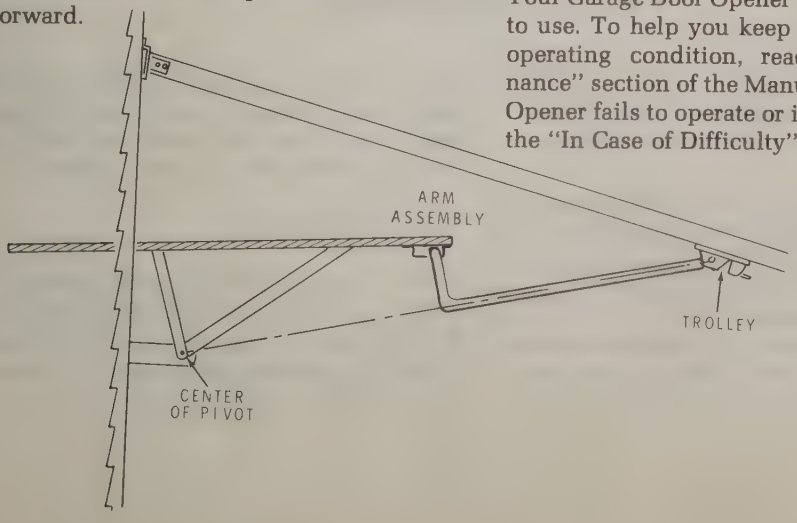


Figure 2-25

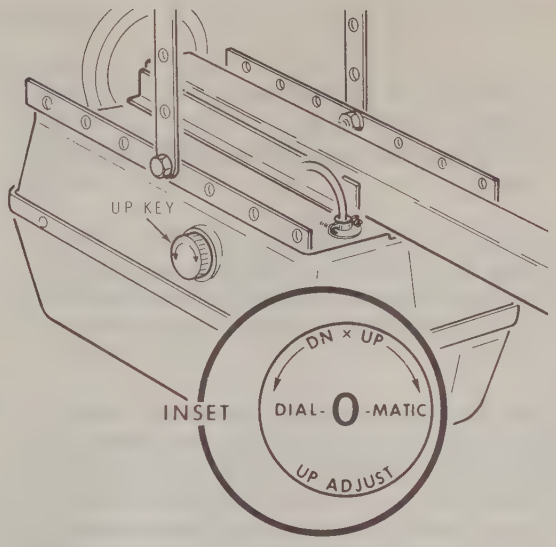


Figure 2-24

( ) Close and open the door. You may have to adjust either limit switch again. Make only a slight adjustment. Then close and open the door again. Proper adjustment is obtained when the door coasts to its fully open position.

To check for proper operation of the safety switch, perform the following steps.

( ) Stand near the garage door. Then have someone depress the pushbutton switch to lower the door.

( ) As the bottom edge of the door comes downward, grasp the edge of the door to restrain its downward travel. The door should reverse its direction of travel.

Your Garage Door Opener is now adjusted and ready to use. To help you keep the Door Opener in good operating condition, read through the "Maintenance" section of the Manual on Page 42. If the Door Opener fails to operate or if a problem arises, refer to the "In Case of Difficulty" section on Page 43.

OPERATION

Your Heathkit Garage Door Opener is simple and convenient to use. Just press the doorbell-type pushbutton switch and hold it in until the garage door starts to move.

You may either open or close your garage door by actuating the Door Opener as just described. The pushbutton switch can also be pressed any time the Door Opener is in operation to reverse the direction of door travel.

For more control of the Door Opener, you may use additional switches similar to the doorbell-type pushbutton switch supplied with this kit. The additional switches may be placed at any location from which you wish to open or close the garage door. A length of 2-conductor cable should be connected from each additional switch to lugs 2 and 3 of the 3-screw terminal strip on the Door Opener chassis.

Each of the switches should be labeled prominently so visitors will not mistake them for doorbell buttons.

REMOTE CONTROL

Your Garage Door Opener uses a three-wire system. As you connect wires between the Receiver and the Opener mechanism, be sure to connect the wires to identically called-out connections on both units; that is, a wire connected to "24V" on the Opener terminal strip will also be connected to the "24V" screw on the Receiver. In a like manner, the terminal screws labeled "RELAY" will be connected to one another, and the "RADIO POWER" terminals will be wired to one another.

LAMP

The lamp on the Door Opener is turned on when the garage door is either opened or closed. It remains on for 1 to 3 minutes after the door stops moving. A 75-watt lamp is recommended. If a lamp larger than this is used, the heat from the bulb may melt the lamp lens.

LOCKING THE GARAGE DOOR

When properly installed, the Door Opener will lock all types of garage doors closed. It is impossible to open the door by hand from outside your garage. If you wish to open or close your garage door without using the Door Opener, simply grasp the rope attached to the quick-release and pull. The arm assembly will disconnect from the trolley and the door can be opened by hand.

If you wish to temporarily disable your Garage Door Opener, while on vacation for instance, you may wish to remove the line cord from the AC receptacle, or to install an on-off switch in the AC line to the Door Opener receptacle.

SAFETY SWITCH

The safety switch located in the track and screw assembly will return the door to its fully open position should the door be obstructed while closing.

POWER FAILURE

In case of an electric power failure, it will be necessary to disconnect the arm assembly from the trolley and operate the door by hand until power service is restored.

MAINTENANCE

Very little maintenance is required to keep your Garage Door Opener in good operating condition. The following points should be checked periodically.

MECHANISM

WARNING: The motor can be activated during adjustments on the Door Opener. Therefore, be sure to disconnect the line cord plug from the AC outlet before you work on the Opener.

When necessary, the V-belt on the Door Opener pulleys can be tightened by loosening the motor mounting hardware, repositioning the motor slightly for proper belt tension, and then retightening the hardware. Do not overtighten the V-belt or the motor shaft will bind and overheat the motor.

GARAGE DOOR

It is important that the moving parts of the garage door assembly are kept well lubricated as directed by the door manufacturer. Be sure the door is not warped or binding, as might be the case with wooden doors during highly humid weather.

IN CASE OF DIFFICULTY

Any problem that develops with your Garage Door Opener should first be isolated to the Transmitter, Receiver, or mechanism (provided the optional Transmitter and Receiver are used). If they are not used, refer to the "General Troubleshooting Information."

To isolate a problem when the optional Transmitter and Receiver are used, press the pushbutton switch and proceed as follows:

a. If the Door Opener does not operate properly, the cause of the problem is in the Door Opener. First refer to the "General Troubleshooting Information." Then, if necessary, refer to the "Troubleshooting Chart."

b. If the Door Opener operates properly, the cause of the problem is in the Transmitter or Receiver. Refer to the Manual supplied with the Transmitter and Receiver.

GENERAL TROUBLESHOOTING INFORMATION

1. Recheck the wiring. Trace each wire in colored pencil on the Pictorials as it is checked. It may be helpful to have a friend check your work. Someone who is not familiar with the unit may notice something you have consistently overlooked.

2. If, after careful checks, the problem is still not located and a voltmeter is available, check the AC voltages against those shown on the "Schematic Diagram" (Illustration Booklet, Page 10). A continuity check of the various components may also help to locate the problem.

3. A review of the "Circuit Description" on Page 46 and a study of the "Schematic" may also help you locate the difficulty in the Door Opener.

NOTE: In an extreme case where you are unable to resolve a difficulty, refer to the "Customer Service," information inside the rear cover of the Manual. Your Warranty is located inside the front cover.

Troubleshooting Chart

CONDITION	POSSIBLE CAUSE
Mechanism inoperative.	1. AC power source. 2. 24-volt transformer. 3. Latching relay RL1.
Motor inoperative, buzzing sound coming from control head.	1. Capacitor C1. 2. Latching relay RL1.
Light does not stay on after circuit is activated.	1. Incorrectly adjusted thermal switch RL2.
Door returns to open position during closing operation when pushbutton is released.	1. Latching relay RL1.
Door does not reverse when meeting an obstruction.	1. Clutch adjustment. 2. Automatic reversing switch.
Door returns to open position during closing operation with no obstruction present.	1. Clutch improperly adjusted.
Clutch slips.	1. Clutch adjustment. 2. Door hardware needs lubricant. 3. Warped or binding door.
Motor continues to run when Door Opener is fully open.	1. Up-limit switch. 2. Cam adjustment.
Motor contines to run after door is fully closed.	1. Down-limit switch. 2. Cam adjustment.
Light will not turn off in 1 to 3 minutes.	1. Readjust thermal switch RL2 (see instructions on Page 12.)
Latching relay clicks but door will not move.	1. Cam arms closing both limit switches at the same time. Turn up or down key slightly to disengage switch lever.
Relay clicks, but door does not move (after repeated operation).	1. Thermal circuit breaker in motor. Wait 5 minutes or more for breaker to cool.
Door does not move when pushbutton is pushed; buzz sound is heard from control head.	1. Radio control. Disconnect Receiver wires; mechanism should operate normally.

SPECIFICATIONS

Door Size and Type	All types of overhead residential garage doors up to 7-1/2 feet high.
Control	Wall-mounted pushbutton switch, or optional devices (transmitter, receiver, key switch, etc.).
Door Opening or Closing Time	Approximately 12 seconds.
Safety	Door travel reverses, returns to fully open position and stops if obstructed while closing.
Overhead Mounting Clearance	3″ above highest point of door travel.
Safety Lamp	75-watt (maximum) lamp automatically turns on when the Door Opener is activated. Delay circuit keeps lamp on for 1 to 3 minutes after motor stops.
Motor	110-130 VAC, 60 Hz, 1/3 horsepower, capacitor run, 950 RPM.
Power Requirements	110-130 VAC, 60 Hz, 725 watts (excluding lamp).
Net Weight	33 lbs.

The Heath Company reserves the right to discontinue products and to change specifications at any time without incurring any obligation to incorporate new features in products previously sold.

CIRCUIT DESCRIPTION

Refer to the Schematic Diagram (Illustration Booklet, Page 10) while you read this "Circuit Description." The Schematic Diagram shows the position of all switch and relay contacts when the garage door is open, the motor is not running, and the lamp is turned off.

To automatically open and close a garage door, it is necessary to use a mechanism that can start, stop, and reverse the direction of the drive motor. These functions are obtained by using a power circuit, a switching circuit, and a motor that has both forward and reverse windings. The power circuit, supplies the necessary line voltage to operate the motor, while a 24-volt switching circuit controls the latching relay which directs power to the appropriate limit switch and motor winding.

Line voltage is applied to transformer T1, to the yellow (common) motor lead, and to contact 4 of latching relay RL1. The motor has an internal thermal circuit breaker for overload protection. This circuit breaker automatically resets after any circuit overload problem has been corrected.

The externally mounted pushbutton switch connects 24 volts (AC) across the coil of relay RL1 and causes the relay contacts to latch in a reversed position (opposite that shown on the Schematic). Power is then applied through contacts 4 and 3 of relay RL1, through contacts 5 and 4 of the down-limit switch, and through the down winding of the motor. The motor will run until either the down-limit switch, the safety switch, or the pushbutton switch is actuated. When the door reaches its closed position, contacts 4 and 5 of the down-limit switch will open and remove power from the down winding.

Capacitor C1 is, at one time, parallel with the up winding of the motor, and at another time in parallel with the down winding. This capacitor causes an approximate 90-degree phase shift in the power applied to the motor windings, allowing the motor rotation to be reversed as required to operate the door in the proper direction.

If an obstruction prevents the door from closing, the safety switch contacts will close and apply 24 volts through contacts 2 and 1 of relay RL1, and through contacts 2 and 1 of the down-limit switch, to the coil of RL1. This will happen when the drive screw has stopped and the clutch has slipped one revolution. Relay RL1 will now latch in the position shown on the Schematic. Whenever the door is not fully open, contacts 1 and 2 of the up-limit switch are closed. Power is now coupled through contacts 4 and 5 of RL1, and through contacts 1 and 2 of the up-limit switch, to the up winding of the motor. The motor will drive the Door Opener to open the door until contacts 1 and 2 of the up-limit switch are opened. Also, the safety switch circuit is disable by the open contacts 1 and 2 of RL1 when the door is opening.

Due to the extra closing force required to properly seal most garage doors during the last 2 or 3 inches of travel, contacts 1 and 2 of the down-limit switch open to disable the safety switch. This prevents the safety switch from interpreting this extra force as an obstruction and reopening the door.

Whenever the motor is running, the heater coil of the thermal switch draws current from the power line. This action heats a bimetallic strip and causes one of its contacts to bend and touch a stationary contact. The lamp is now placed across the power line and will remain on for 1 to 3 minutes after the motor stops.

FOR PARTS REQUESTS ONLY

- Be sure to follow instructions carefully.
- Use a separate letter for all correspondence.
- Please allow 10 - 14 days for mail delivery time.

DO NOT WRITE IN THIS SPACE

INSTRUCTIONS

- Please print all information requested.
- Be sure you list the correct **HEATH** part number exactly as it appears in the parts list.
- If you wish to prepay your order, mail this card and your payment in an envelope. Be sure to include 10% (25¢ minimum, $3.50 maximum) for insurance, shipping and handling. Michigan residents add 4% tax.

  Total enclosed $_____
- If you prefer COD shipment, check the COD box and mail this form. COD ☐

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

The information requested in the next two lines is not required when purchasing nonwarranty replacement parts, but it can help us provide you with better products in the future.

Model # _____ Invoice # _____

Date Purchased _____ Location Purchased _____

LIST **HEATH** PART NUMBER	QTY.	PRICE EACH	TOTAL PRICE

TOTAL FOR PARTS	
HANDLING AND SHIPPING	
MICHIGAN RESIDENTS ADD 4% TAX	
TOTAL AMOUNT OF ORDER	

SEND TO: **HEATH COMPANY**
BENTON HARBOR
MICHIGAN 49022
ATTN: PARTS REPLACEMENT

Phone (Replacement parts only): 616 982-3571

THIS FORM IS FOR U.S. CUSTOMERS ONLY
OVERSEAS CUSTOMERS SEE YOUR DISTRIBUTOR

CUT ALONG DOTTED LINE

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CUSTOMER SERVICE

REPLACEMENT PARTS

Please provide complete information when you request replacements from either the factory or Heath Electronic Centers. Be certain to include the **HEATH** part number exactly as it appears in the parts list.

ORDERING FROM THE FACTORY

Print all of the information requested on the parts order form furnished with this product and mail it to Heath. For telephone orders (parts only) dial 616 982-3571. If you are unable to locate an order form, write us a letter or card including:

- Heath part number.
- Model number.
- Date of purchase.
- Location purchased or invoice number.
- Nature of the defect.
- Your payment or authorization for COD shipment of parts not covered by warranty.

Mail letters to: Heath Company
Benton Harbor
MI 49022
Attn: Parts Replacement

Retain original parts until you receive replacements. Parts that should be returned to the factory will be listed on your packing slip.

OBTAINING REPLACEMENTS FROM HEATH ELECTRONIC CENTERS

For your convenience, "over the counter" replacement parts are available from the Heath Electronic Centers listed in your catalog. Be sure to bring in the original part and purchase invoice when you request a warranty replacement from a Heath Electronic Center.

TECHNICAL CONSULTATION

Need help with your kit? — Self-Service? — Construction? — Operation? — Call or write for assistance. you'll find our Technical Consultants eager to help with just about any technical problem except "customizing" for unique applications.

The effectiveness of our consultation service depends on the information you furnish. Be sure to tell us:

- The Model number and Series number from the blue and white label.
- The date of purchase.
- An exact description of the difficulty.
- Everything you have done in attempting to correct the problem.

Also include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.

Please do not send parts for testing, unless this is specifically requested by our Consultants.

Hints: Telephone traffic is lightest at midweek — please be sure your Manual and notes are on hand when you call.

Heathkit Electronic Center facilities are also available for telephone or "walk-in" personal assistance.

REPAIR SERVICE

Service facilities are available, if they are needed, to repair your completed kit. (Kits that have been modified, soldered with paste flux or acid core solder, cannot be accepted for repair.)

If it is convenient, personally deliver your kit to a Heathkit Electronic Center. For warranty parts replacement, supply a copy of the invoice or sales slip.

If you prefer to ship your kit to the factory, attach a letter containing the following information directly to the unit:

- Your name and address.
- Date of purchase and invoice number.
- Copies of all correspondence relevant to the service of the kit.
- A brief description of the difficulty.
- Authorization to return your kit COD for the service and shipping charges. (This will reduce the possibility of delay.)

Check the equipment to see that all screws and parts are secured. (Do not include any wooden cabinets or color television picture tubes, as these are easily damaged in shipment. Do not include the kit Manual.) Place the equipment in a strong carton with at least THREE INCHES of *resilient* packing material (shredded paper, excelsior, etc.) on all sides. Use additional packing material where there are protrusions (control sticks, large knobs, etc.). If the unit weighs over 15 lbs., place this carton in another one with 3/4" of packing material between the two.

Seal the carton with reinforced gummed tape, tie it with a strong cord, and mark it "Fragile" on at least two sides. Remember, the carrier will not accept liability for shipping damage if the unit is insufficiently packed. Ship by prepaid express, United Parcel Service, or insured Parcel Post to:

Heath Company
Service Department
Benton Harbor, Michigan 49022

HEATH

Schlumberger

MP MASTER

MA22820

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